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VEY, called to Washington to head pulp and paper production for the WPS.

# Pulp & Paper

The Cellulose Age

FIC INDUSTRY

8

JANUARY • 1944

No. 1



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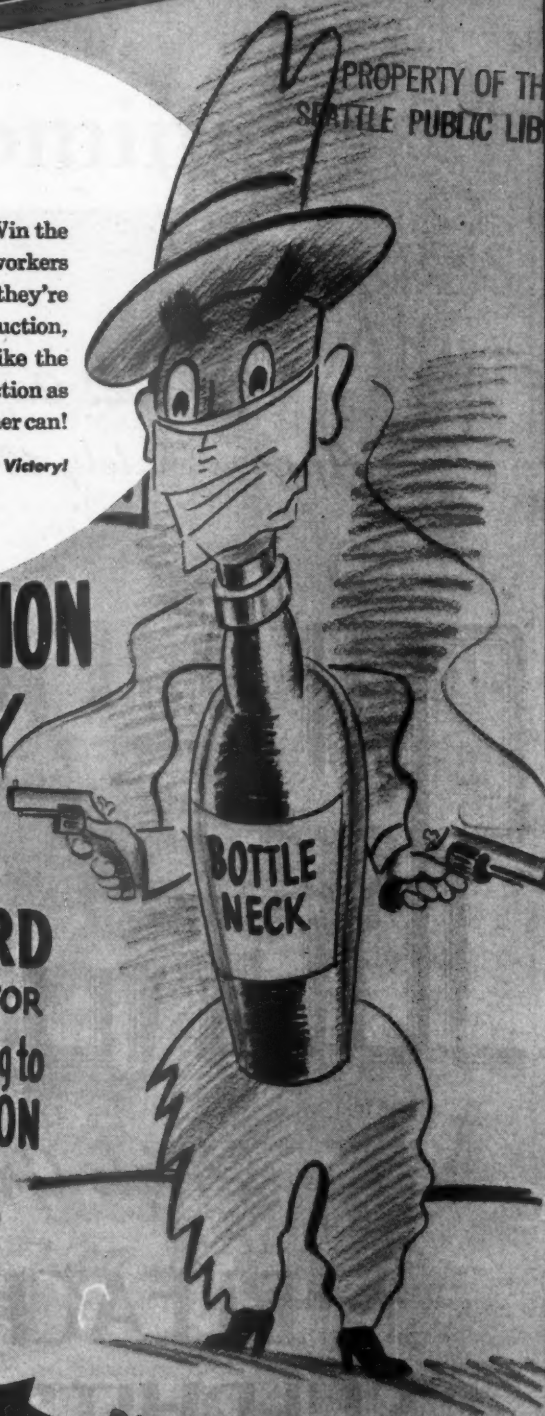
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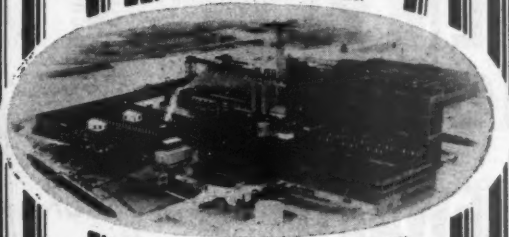
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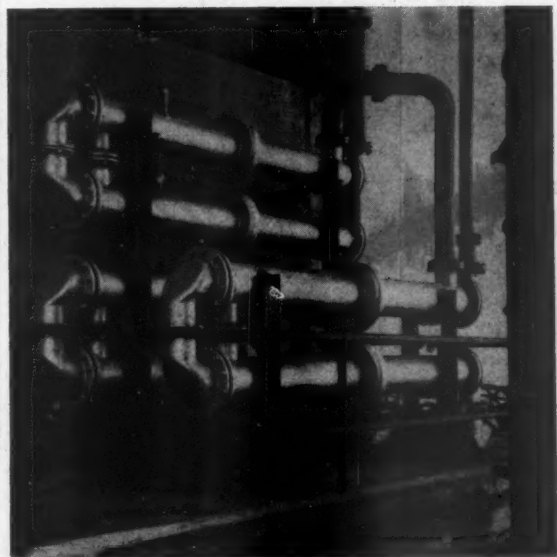
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*Wood Pulp and Paper*

**BULKLEY, DUNTON PULP CO.**

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## From Ship Parts to Plane Parts--What Next?

(Editorial)

**W**HAT will the pulp and paper mills be doing next?

Off in a corner of the extensive Powell River Company plant, far removed from the hum of the big newsprint machines, a visiting representative of PACIFIC PULP & PAPER INDUSTRY recently came across an unusual shop—probably the first of its kind ever set up in a paper mill.

There were girls and women in slack suits all over the place—most of them assembling parts for the famous Boeing Flying Fortresses. The others were apprentices, practicing using drills, etc., on light metal sheets, before being assigned to the delicate operations on the Fortress parts.

Three very important green-painted parts of the Bomber planes were being assembled. We were cautioned not to identify them. About fifty women were working in the shop—an old newsprint storage shed—at the time, but we were told the crew would be enlarged to 150 women early in 1944.

The assembled and complete parts are sent to the Boeing Aircraft Company of Canada in Vancouver, B. C.

Here, in another important way, the pulp and paper industry is directly engaged in helping in the all-out bombing of Germany and the bombing attacks on the Japs.

The work done in this aircraft assembly shop at Powell River, B. C., is comparable with the upwards of seven million dollars worth of work already done in the machine shops of thirty Pacific Coast pulp and paper mills of the United States and Canada, assembling and finishing big rudder assemblies, ship operating parts, windlasses, winches, valves, etc., for aircraft carriers, destroyers, landing barges, cargo ships and tankers.

This is work the pulp and paper manufacturers mills went out and got for themselves. It was their own idea. Nobody asked them to do it. The industry wanted to do more for the war effort than merely producing essential pulp, paper and paperboards, notwithstanding how important these more orthodox products have become.

And the pulp and paper manufacturers of the Pacific Coast still are eagerly and energetically going after this machine shop work—especially after the kind of jobs that are not appealing to the big foundries, working on assembly line basis, or which are not profitable for the commercial firms.

## Employment After the War Is Over

**T**O provide work for returning service men and for a considerable portion of the new industrial employees who will want to remain in the state after the war, the Washington State Planning Council estimates there must be a total of 940,000 jobs provided after the war.

The council reported that about 600,000 were employed in the state in 1939 and that the balance, 340,000 jobs, would be required for service men and newcomers to the state.

Thousands of service men will return to jobs in the Pacific Coast pulp and paper industry, a large portion to mills in Washington state. These jobs were saved for them.

These men and others who stuck it out with the pulp and paper industry at the specific request of manpower and selective service directors in Washington and Oregon will find themselves in preferred positions when the war is over.

They will have kept their seniority in an industry that will be a bulwark of Pacific Coast industrial enterprise in the years of peace as it was in war years.

## Who's Being Kiddled?

**S**TRIKE or "work stoppage"—no matter what kind of a trick name is given the act, the American public is not being kidded. Both are intolerable to the American public in time of war.

In plain language, the chairman of the national war board says so-called "work stoppages" are a violation of the labor organizations' no-

strike pledge.

Denying they are striking, labor organizations have insisted that the newspapers of the country describe their actions in shutting down mills as "a work stoppage." In these cases, newspapers, leaning backwards in their efforts to keep out of any and all controversies, have acceded to the demands of unions that the word

strike is taboo.

Thus, the only two such occurrences in ten years' history of otherwise pleasant labor relations in the Pacific coast pulp and paper industry—both occurring within the past nine months at the same mill—have been described as "work stoppages."

Who's being kidded? We repeat, it isn't the public.

## THE SAGA OF RED MOUNTAIN

(Or, The Bear That Went Over It, and How!)



A "SAVAGE" BEAR HUNT NOW IN ITS FOURTH YEAR OF RUNNING—as conducted by J. D. Savage, superintendent of the sulphite mill, Crown Willamette division of Crown-Zellerbach Corporation, Camas, Wash. (The above cartoon was drawn by FRANK SILL, bag factory office employee at the Camas mill).

By C. A. ANDERSON\*

● Walt Jacoby and Jack Savage\*\* spent many days, yes, even weeks, planning a hunting expedition that would not only yield them a winter's

\*Mr. Anderson is Wood Technologist at the Camas, Wash., mill of Crown Zellerbach Corporation, and an expert observer of bear hunters. \*\*When not pursuing—pardon, hunting—bear, Mr. Savage keeps fairly busy as Sulphite Superintendent at the Camas mill. Mr. Jacoby likewise is normally occupied with his duties as Assistant Technical Supervisor at the same mill.

supply of meat, but would also remove forever the stigma surrounding the hunting abilities of these two "Daniel Boones" of Crown Zellerbach.

Their plans completed and with light hearts, our intrepid hunters set out on a recent date for Terminal Rock, their destination in the wilds of the Cascade range in the vicinity

of Camas, Wash. (It might be well to mention that a third party was taken along because he, too, wanted to go hunting, but more than likely they wanted a witness for verification purposes.)

For two days and three nights our hunters braved the wilderness of Red Mountain. Finally, Jack Savage got on the trail—I mean trail—of a bear and started him toward camp. The bear was traveling about thirty miles an hour but Jack was traveling thirty and one-half miles an hour, so he was able to keep ahead of the beast.

On his first trip through camp Walt Jacoby was poking a porcupine out of a hollow stump with his gun barrel so he didn't see the bear; on Jack's second trip through camp Walt quickly raised his gun, threw the bolt into action, but couldn't shoot because he forgot to move his thumb and it was firmly caught in the shell chamber.

Jack successfully out-tracked the bear and returned to camp, and so, gentle readers, that is the true story of how Jack and Walt hunted the great beast of the woods—"Bruin, the Bear."

Jack Savage's only remark was, "Oh, well, the danged thing would probably have been too big to bring home in the car anyway."

## NEWS OF

### The Pacific Pulp & Paper Industry-- Fifteen Years Ago

Union Bag Company starts operation of new 120-ton sulphate pulp mill with W. W. Griffith as resident manager.

With Dr. H. K. Benson, of the University of Washington presiding, Myron Black, William Breitenbach, Erik Ekholm, Bob Bundy, B. T. McBain, C. B. Everitt, Ralph Reid and F. C. Brewer of the Washington and Oregon mills, and Robert Scanlon, Robert Bell-Irving and E. P. Brennan, of Canadian mills, met in Seattle January 12 and decided to petition TAPPI for the right to organize a Pacific Coast Section.

### Ten Years Ago

Lawrence Killam, chairman of the Pacific Section of TAPPI, greeted 1934 as the year that would bring the first annual fall meeting of the full North American membership of TAPPI to the Pacific Coast.

Spaulding Pulp & Paper Company, Newberg, Ore., resumed operations January 25 after more than a two-year shutdown. It had a large order for dry-shredded pulp for Japan. Superintendent J. B. Wilt smiled happily as the machinery began humming again.

### Okays Alcohol Plant

● The Chemical Division of the War Production Board has approved the application of the Puget Sound Pulp & Timber Company of Bellingham, Wash., for construction of an alcohol plant that would make alcohol from sulphite waste liquor.

This decision must be approved by the WPB before any action may be taken under wartime priority regulations. It is understood that some other pulp mills have made similar applications.

Eric Ericsson, technical director of the Puget Sound Pulp & Timber Company, returned on December 17 from a trip of nearly three weeks to pulp and paper mills of the east. Included in his itinerary was a visit to the new alcohol plant now in operation at the Ontario Pulp & Paper Company in Thorold, Ont., owned by the Chicago Tribune. This plant, making alcohol from waste liquor, began operation last summer.

## 1944 Looms As Most Critical Year For Pulp and Paper Industry

**N**INETEEN FORTY-FOUR is starting out as the year of greatest ordeal—and, coincidentally, the year of greatest service to their countries—for the pulp and paper industries of the United States and Canada.

We have word from the War Production Board in Washington that there have been "recent additional, unexpected and very large STRATEGIC REQUIREMENTS for paper by the army and navy." We don't know exactly what all these requirements are but it is probable that as use of shells in the military offensives increase in ratio to bombing, there will be increasing demands for nitrating pulp, now the principal source of smokeless powder. In rayon cord for tires and for parachutes and uniforms and for many forms of durable packaging, pulp and paper are increasing in demand.

But at the same time, 1944 promises to be the year of the most critical shortages in pulpwood, pulp, paper and paperboard. And 1944 has brought the greatest restrictions yet imposed on the industry and use of pulp and paper products in both United States and Canada.

If the war ends in Europe and a full-fledged offensive begins in the Pacific, as is widely expected, it may mean a year of even greater trial for the Pacific Coast pulp and paper industry. Traffic congestion in east-west hauls added to the already critical manpower shortage can make it really tough for the industry. However, some optimists think much traffic will by-pass the Pacific Northwest, heart of the western industry, and that it may largely be cancelled out as a congestive factor by discontinuing the heavy traffic of recent months to Russia. This movement has been stupendous

ON THE COVER of this issue is Rex W. Hovey, Vice President in Charge of Manufacturing of the Oxford Paper Company, who has become the leading personality drawn from the pulp and paper industry in the reorganization of the War Production Board set-up in Washington. Head of the newly formed Paper Division, with numerous branches and sections serving under him, Mr. Hovey a few weeks ago had pulp production added to his responsibilities.

In a letter to PACIFIC PULP & PAPER INDUSTRY, he said: "The paper situation is very critical and will require full cooperation of paper manufacturers . . . to alleviate the situation brought about by the shortage of pulp and pulpwood."

and may be halted in the Pacific with the opening of the Atlantic routes and in order to muster all transport equipment for the fighting forces in the Pacific area.

Whatever may happen, eyes are now on a new regime in Washington, D. C., whose task it is to guide the efforts of the pulp and paper industry through its most difficult year and, at the same time, into channels most productive of assistance to the war effort.

McKenna, Winton, Wakeman—men who gave unstintingly of time and effort in the battles on the home fronts as past heads of the old WPB Pulp & Paper Division—did not have to face in the first two years of the war such grave problems as are now faced by Harold Boeschstein, director of the newly organized Forest Products Bureau; Rex W. Hovey, director of the Paper Division, who a few weeks ago had pulp



THREE OF THE KEY FIGURES IN REORGANIZATION OF WPB GROUPS:

Left—HAROLD BOESCHSTEIN, President of Owens Corning Fiberglas Corp., who is Director of Forest Products Bureau.

Center—H. O. NICHOLS, Manager, Eastern Division, Crown Zellerbach Corp., who is in charge of the Coarse Paper Branch of the Paper Division of the Forest Products Bureau. Mr. NICHOLS spent many years in the sales division of the Crown Zellerbach offices in San Francisco before going east.

Right—E. F. TOMISKA, Director of the WPB Containers Division which has been transferred to the Forest Products Bureau. His Division deals with multi-wall bags, fiber cans, drums, etc., as well as wood, textile, glass and metal containers, while fiber containers and boxboards are in a new Paperboard Division.

production added to his responsibilities, Arthur G. Wakeman, who continues in Washington as consultant to Mr. Boeschstein, and James M. Madden, deputy director of the Paper Division, who is charged with responsibility for production of pulpwood.

### Boeschstein's Right Hand Man

As more information comes from Washington and the shuffling and shaking down of WPB job continues, it becomes more and more apparent that Mr. Boeschstein, who in private life is president of the Owens Corning Fiberglass Corporation, is going to lean heavily upon Mr. Hovey in directing the pulp and paper industry.

As announced in last October's issue, and further discussed in our November number, Mr. Boeschstein went to Washington to bring about much needed coordination of the various cellulose industries and effect a closer tie-in between these industries and agencies such as the Manpower Commission, ODT, OPA, etc.

His job was to coordinate activities of the Lumber & Lumber Products Division, under Philip J. Boyd; the Paper Division, under Mr. Hovey; the Paperboard Division, headed by G. G. Otto; the Printing & Publishing Division, led by Harry M. Bitner; the Containers Division, under E. F. Tomiska, and Pulp and Pulpwood Production, then headed by A. B. Hansen.

After Mr. Hansen resigned and returned to his presidency of Northern Paper Mills, Green Bay, Wis., Mr. Madden, the 34-year-old vice president of Hollingsworth & Whitney Co., Boston, was called to Washington. Mr. Hovey was then called upon to take over direction of all pulp as well as paper production—thus ending the brief and ill-starred attempt to split up the old pulp and paper division. And Mr. Madden, called upon to give his full time to direction of pulpwood production, an increasingly serious problem, became deputy director under Mr. Hovey.

David Graham, handling pulp allocation, was still responsible directly to Mr. Boeschstein, although the production of pulp was put under Mr. Hovey's jurisdiction, continuing a confusing situation in this respect.

### Ben Cancel Coming West

● BEN CANCEL, ANOTHER SPECIAL ASSISTANT TO MR. BOESCHSTEIN, IS PLANNING A TRIP IN LATE JANUARY TO THE PACIFIC NORTHWEST. Mr. Cancel, who is well known in the industry for his association work, has recently been engaged in handling WPB activities in Ottawa, particularly arrangements for pulpwood exports from eastern Canada to the United States.

On his western trip it is understood he will confer with industry executives in Seattle and other Puget Sound cities and call on the Timber Control office in Vancouver, B. C.

Mr. Hovey is, in private life, vice president in charge of manufacturing of the Oxford Paper Company, big producers of coated papers, with sulphite and soda mills in Rumford, Maine, and Carleton, Ohio. Known in the industry as a hard-working, keen-minded, two-fisted man, he takes leave from this high post to assume his expanding Washington duties with widespread confidence and support among his many friends.

Mr. Hovey's job is still expanding, according to latest reports. As the pulp and paper industry goes into 1944, girded for a victorious war, it finds Oxford Company's Rex Hovey as the highest-placed man from the industry now serving in Washington.

H. O. Nichols, eastern manager of the Crown Zel-

## PACIFIC PULP & PAPER INDUSTRY

lerbach Corporation, with offices in New York, has been likewise called to Washington for full time as Mr. Hovey's chief deputy in charge of a newly formed Coarse Paper Branch, composed of (a) kraft, (b) sulphite, semi-bleached kraft and bleached kraft, (c) glassine and greaseproof papers and vegetable parchment, (d) special industrial papers and (e) tissue sections.

Henry G. Boon of Neenah, Wis., is Mr. Hovey's chief of a Fine Paper Branch, divided into newsprint, book, and groundwood paper and writing paper sections. A Converted Paper Products Branch has been organized also.

The well known War Products Development Section, charged with assisting in developing new uses for paper, has been reorganized and designated a Technical Staff, with Lyman Beeman, formerly of St. Regis Paper Company as chief, succeeding R. J. Zaumeyer. This also is serving under Mr. Hovey as his staff.

Another westerner called to Washington is G. E. Carpenter, Omaha, Neb., vice president of the Carpenter Paper Company, appointed as a consultant in the paper section of the Office of Civilian Requirements.

### Mr. Hovey's Letter

● In a letter addressed to PACIFIC PULP & PAPER INDUSTRY, Mr. Hovey wrote:

"THE PAPER SITUATION IS VERY CRITICAL AND WILL REQUIRE FULL COOPERATION FROM ALL PAPER MANUFACTURERS, THROUGH THE UTILIZATION OF SUBSTITUTE FIBROUS MATERIALS, TO ALLEVIATE THE SITUATION BROUGHT ABOUT BY THE SHORTAGE OF PULP AND PULPWOOD.

"WE ARE ATTEMPTING TO KEEP THE INDUSTRY ADVISED WITH RESPECT TO THE CRITICAL SITUATION BY PRESS RELEASES AND THROUGH THE INDUSTRY ADVISORY COMMITTEES."

In reply to an inquiry from PACIFIC PULP & PAPER INDUSTRY, Mr. Madden, the deputy director of the Paper Division, said a meeting to discuss ways and means of increasing pulpwood production in the Pacific Northwest was tentatively planned for this year, apparently in the next few months. Plans for such a meeting, he said in the letter written in December, have been postponed "until after the first of the year."

Mr. Madden, graduate of Harvard College and Harvard Business School, was born in Boston 34 years ago, and has been with Hollingsworth & Whitney Co., operators of mills in Maine and Alabama and woodlands in Canada, since 1934.

### "Jimmy" Madden Outlines Task

● In describing the task ahead of him, Mr. Madden wrote this magazine:

"The problems involved in maintaining sufficient pulpwood production to meet requirements can be broken down into three major groups: those involving woods labor, transportation, and production costs and ceiling prices. Since each of these problems is handled on a national scale by a separate government agency, it is necessary for the Pulpwood Production Branch to maintain close contact and cooperation with the War Manpower Commission, Office of Defense Transportation, and the Office of Price Administration. In addition to handling the problems in these major fields, our office is also responsible for the planning of pulpwood production schedules and notifying industry of present and future pulpwood requirements in

order that industry in turn may make its plans meeting these requirements.

"In addition to the Washington office staff, the Pulpwood Production Branch maintains a full-time pulpwood representative in each of the six major pulpwood producing regions. These regional representatives are well qualified men from industry who assist industry in the field with their pulpwood production problems and who pass on to the industry units in their respective regions the policy programs which affect the pulpwood industry.

"As you undoubtedly know, Mr. E. J. Hayes, who is the West Coast Pulpwood Representative for this office, handles all of our pulpwood production problems in the states of Washington and Oregon. Mr. Hayes was formerly with the St. Regis Pulp and Paper Company, Tacoma, Washington, and has a fine appreciation for the industry problems in the Northwest.

"The Regional Meeting in Seattle, about which you inquired in your letter of November 29, has been postponed until after the first of the year. We expect Mr. Hayes to be in Washington next week, and are looking forward to covering many of the problems with him at that time.

Sincerely yours,

James L. Madden,  
Deputy Director,  
Paper Division."

Mr. Hayes returned to Seattle December 24 from Washington, pleased with the new WPB set-up.

M. H. Collett, a graduate forester with experience in the U. S. Forest Service and private industry, is Mr. Madden's assistant in directing pulpwood production.

Here are some facts showing the critical state of the industry as it starts off the year 1944:

The WPB has fixed 1,400,000 tons as the allowable monthly rate of production for the first three months of 1944 for the United States industry. This is 2.3 per cent under the overall production level of July, August and September last and nine per cent under the volume proposed by the mills.

Newspapers are slimmer this year as the Canadian shipments are reduced and the WPB cut newspapers quotas an average of 23 per cent for the first quarter of 1944. Even though Canada offered to supply 200,000 tons of newsprint a month to the United States during the first half of 1944, the WPB decided to hold newspapers to use of only 182,000 tons per month, because, as Mr. Boeschstein said, of "the vital need of paper for military operations."

Many paper mills were forced to shut down for one or more days in October, November and December. Many were operating at about 60 or 70 per cent of capacity, and at least one mill reported shipping waste

paper at a loss from the coast in order to keep going.

The packaging industry, user of half the nation's pulp, faced drastic curtailment.

Several waste paper salvage campaigns are under way but even if all are successful, there still will be a paper shortage, according to Pulp & Paper Bulletin, the new publication of the Bulkley, Dunton Pulp Company.

It is becoming increasingly clear that more stress could well be put upon getting more use of the wood that is available to the country—by the WPB granting authority to build new types of machinery which have demonstrated that they will increase the yield of pulp from wood and by making more use of waste wood.

Closer utilization of wood has long been advocated in these pages and instead of bearing down continuously on restriction and limitation, the WPB might help solve its problems by encouraging and assisting mills to make closer use of the wood they have.

## Boeschstein's Report and Pulp Allocations

● It is understood that the report of Harold Boeschstein, Director of the Forest Products Bureau, to the Requirements Committee of the War Production Board contains the following conclusions:

1. Pulpwood supply in the U. S. mills off 16% for the first ten months 1943 as compared with the first ten months 1942.
2. Pulpwood consumption third quarter 1943 — 3,731,000 cords.
3. Pulpwood consumption fourth quarter 1943 — 4,000,000 cords.
4. Recommended consumption first quarter 1944 — 3,895,000 cords.
5. Recommended allocation — 837,000 tons of pulp per month during first quarter 1944 to produce 1,398,837 tons of paper and board.

Pulp will be allocated in a manner that will permit production of the following quantities of each major classification of paper:

Grade— Paper	Av. Monthly Allocation 1st Quarter Tons	Per Cent Below Amounts Proposed by Mills	Per Cent Change from 3rd Quarter 1943 Rate
Newsprint	60,000	—14.7	—10.3
Groundwood	44,784		—7.5
Book	114,732	—21.0	—13.3
Fine	74,178		—10.5
Coarse	157,190	—12.0	—5.0
Multi-Wall	29,000	—13.0	+8
Special Industrial	21,770	—7.0	+39.3
Sanitary	66,434	—8.6	+1.3
Tissue	13,428	—12.7	—5.5
Absorbent	7,616	—6.8	—2.6
Building Paper	77,137	0	+3.3
Paperboard			
Container Board	363,447		+4.5
Folding Boxboard	167,801		—2.3
Setup Boxboard	63,016		—8.0
Cardboard	4,438	—1.9	—8.6
Building Board	76,585		—12.3
Tube Stock	27,735		+3.5
Other Paperboard	29,546		+36.6

## Sweden Hopes to Export Pulp to U. S.

● Following his recent election as president of the Association of American Wood Pulp Importers, A. J. Pagel, in a newspaper interview announced that Sweden, in anticipation of a possible resumption of foreign trade on a "peace time" basis by next spring, is rebuilding its stocks of wood pulp to a normal level for the first time since 1939.

A working inventory of 415,000 tons is expected by next April and production will be at a level to meet pre-war demands of the United States and Great Britain. Swedish prices, according to Mr. Pagel will be in accord with American ceiling prices, and he expects the United States,

which has greatly increased its export market in wood pulp, to return to pre-war levels at an early date. These exports have been increased due to the blockade of Scandinavia.

The situation with respect to Finnish and Norwegian mills is complicated by their part in the war.

## Cavin In War Zone

Commander Harold D. Cavin, U.S. N.R., formerly resident engineer for the Puget Sound Pulp & Timber Co., left several weeks ago from San Francisco for duty in the Pacific war zone.

His mail address is 100th U. S. Navy Construction Battalion, c/o Fleet Post Office, San Francisco, Calif.

## Another Camas Ex-Employee Missing in Action

● Jimmie Clark Berg, formerly employed in the napkin department of Crown-Zellerbach mill at Camas, was reported missing in action on December 4. Mr. Berg, with a navy rating of mechanics mate second class, had been serving on a submarine in the Pacific. He enlisted in the navy in August, 1941, after which he received technical training at the Ford Motors plant at Dearborn, Mich., before assignment to sea duty. Three other ex-Camas employees, all fliers, previously have been reported missing on air raids.

## Washington State Mills Pledge \$300,000 - \$500,000 for Waste Liquor Research



GOVERNOR ARTHUR B. LANGLIE of Washington (Left) in a telegram to PACIFIC PULP & PAPER INDUSTRY, commented: "The agreement under which Washington pulp and paper mills will contribute to the University of Washington for research in the field of waste pulp liquor holds great promise for the economic future of our state. The finding of a use for the vast quantities of liquor now going to waste would turn a major problem into an asset. I foresee the possibility that a vast new and important industry

for our state will come with the solution of the waste liquor problem and congratulate the industry for this significant step to promote the welfare of the entire Pacific Northwest."

ARTHUR B. LANGLIE, Governor of Washington.

**T**ESTIFYING to their determination to find a practical solution to the age-old problem of how to use or dispose of waste liquor, 20 Washington state pulp and paper mills have pledged themselves to contribute from \$300,000 to \$500,000 to the University of Washington for the next five years under plans announced by the University Board of Regents on January 1.

The mills will contribute a minimum of \$60,000 annually to finance studies looking toward solution of the pollution problem and possibly finding commercial uses for waste liquor. The mills have offered to increase the amount to \$100,000 annually if advisable.

In statements made to PACIFIC PULP & PAPER INDUSTRY, President L. P. Sieg of the University, and Dr. E. R. Guthrie, dean of the Graduate School, cautioned against expecting any quick solution of the problem which has plagued the pulp and paper industry over the world for many decades. The Dean even went so far as to say that the University "cannot guarantee results."

Dr. H. K. Benson of the Chemistry Department said, "the industry is to be commended for its interest and cooperation."

Only a few weeks before the announcement of the industry's substantial contributions, Governor Arthur B. Langlie approved a Washington state planning council request for allocation of another \$3,600 to the studies already being made at the University in search of a commercially feasible method of extracting ethyl alcohol, lignin derivatives and inorganic chemicals from the sulphite waste liquor of Washington pulp and paper mills.

This was in addition to \$2,150 appropriated by the state to the project for the biennium which, of course, is a mere drop in the bucket compared to the donations now being made by the industry.

Joseph L. McCarthy of the department of chemistry and chemical engineering at the University reported definite progress in the research project in asking that it be continued. He said a new steam process has been developed with a small pilot plant at the University with which sulphur dioxide recovery and more rapid fermentation has been achieved. The latter is important, it was explained, because the sugar content of the sulphite liquor is low and large volumes of the waste material would have to be processed daily in a feasible commercial operation.

Members of an industry committee which executed the agreement with the University are: L. S. Burdon, Soundview Pulp Co., Chairman; F. H. Youngman, Crown-Zellerbach Corporation; R. B. Wolf, Weyerhaeuser Timber Co.; W. S. Lucey, Rayonier Incorporated; and Lawson Turcotte, Puget Sound Pulp & Timber Co., Secretary-Treasurer.

Members of a technical committee to assist the University are: W. B. Barber, Director of Research for Crown-Zellerbach Corporation; R. S. Hatch, Research Director, Weyerhaeuser Timber Co. Pulp Division; Dr. R. Brown, Research Division of Rayonier Incorporated; and Erik Ekholm, Superintendent of Puget Sound Pulp & Timber Co.

### Comments of University Officials

Following are the comments of the University authorities made to this magazine:

#### DR. L. P. SIEG, President, University of Washington:

"The University of Washington feels at once a great honor and a great responsibility has come to it in connection with this generous grant of the state pulp and paper industry.

"We realize that this is an old problem and a difficult one. We cannot, of course, be blamed if we do not reach an early and an immediate solution, but we can be criticized if we do not throw our best efforts into a serious attack on this problem.

"The industry may rest assured that we shall exert our best efforts."

#### DR. E. R. GUTHRIE, Dean, Graduate School:

"According to Mr. T. A. Boyd of the research division of General Motors, the United States was several years ago spending about one-fourth of 1%, or about \$2,000,000 annually of its total income on industrial research. Part of that research is being done by industry and part by the universities of the country. The returns from such research have been many times the value of the sums invested, but such investments of research carry their own risks. There is no certainty that any particular investigation will pay dividends. We only know that the overall returns have been very great.

"In undertaking a research program for the pulp and paper industry of the state, the university takes

on a very serious responsibility. It cannot guarantee results. It can only undertake that its scientific staff do the best it can. It has interested men and available laboratories. The use of these is justified by the fact that any possible improvements in the use of the state's forests will be both in the interests of the public and the industry. What we call natural resources are of no value unless we have an industry organized to convert them into useful products. The possibility of increasing the number of such products or of discovering uses of what is now waste would justify the use of the university's staff and laboratories even if industry did not bear a large share of the costs of salaries and materials.

"The organization of a research staff and a research program takes time. It is hoped that both will be well underway before the first year is up. The five-year period had to be assured because a research staff of the desired quality could only be assembled with some guar-

antee of support through sufficient time to make a serious attack."

**DR. H. K. BENSON, Chemistry Department, University of Washington:**

"The research program dealing with pulp and paper liquor waste contemplates study along several lines. It will include basic studies of wood chemistry, especially of lignin.

"A chemical engineering study of the recovery and utilization of the component of the waste liquors will be undertaken as will also their disposal by methods used by sanitary engineers and the treatment of trade waste.

"The problem is world-wide and has been the subject of investigation for half a century or more. It is felt that its importance to this state warrants continuation of study by scientific engineers. The industry is to be commended for its interest and cooperation in this program of research."

## The Waste Sulphite Liquor Problem

By **RAY S. HATCH**

Director of Research, Pulp Division,  
Weyerhaeuser Timber Company, Longview, Wash.

### A NEW PLANT—WHEN MATERIALS ARE AVAILABLE

When critical materials are available, a plant will be constructed in which waste liquor—produced in cooking with magnesia base acid (instead of the commonly used calcium base)—will be evaporated and burned.

The magnesia then will be recovered as an ash. It will be mixed with water and combined with the sulphur dioxide in the combustion gases to re-form a cooking acid. This will again be used for the production of pulp.

The practical value of the plant "as a means of solving the pollution problem and utilizing waste liquor will be demonstrated."

—R. S. Hatch.

**T**HE process of manufacturing chemical wood pulp commonly known as the sulphite process was invented by an American, Benjamin Tilghman, in 1867. Tilghman's first attempts to produce sulphite wood pulp in this country, however, were not commercially successful and the process remained to be developed by Mitscherlich in Germany, by Ritter and Kellner in Austria and by Ekman in Sweden. All three modifications were later introduced into this country.

In preparing wood pulp by the sulphite process, the wood is reduced to chips, is placed in a pressure vessel and cooked under pressure, normally with an acid produced by the burning of sulphur and absorbing the gases from the burned sulphur either in a suspension of lime in water or by trickling water down over limestone in a tower through which gases from the burned sulphur are passing in counter direction. The so-called acid which accomplishes the pulping of the wood is a solution of calcium bisulphite containing an excess of free sulphur dioxide. Other bases than calcium may be used, for example, sodium, ammonium, and magnesium may be used in the form of bisulphites to form the cooking acid. Lime, however, has been the raw material chiefly used as a base for the production of the cooking acid because of its low cost and ready availability.

When this sulphite acid, at elevated temperatures and pressures, acts upon the wood it dissolves out the bulk of the noncellulose constituents which exist in the wood. These noncellulose constituents may be roughly classified as lignin and as carbohydrates soluble in the cooking acid. Approximately 50% of the material in dry wood is made up of lignin and of these carbohydrates. After the cooking process is completed, the acid liquor containing the dissolved material is separated from the cellulose fiber and becomes the sulphite waste liquor.

Since the discovery of this process, chemists the world over have been working tirelessly either to find a practical method of utilization of the organic material dissolved out of the wood or of disposing of this material in some manner which would avoid the pollution of streams and waterways.

### Three Approaches to Problem

● There are three definite approaches to this problem.

1. By various chemical procedures, we may possibly convert these organic compounds which, in the waste liquor, have no commercial application, into chemical products useful to our economy.

2. By suitable treatment with bacteria, molds or other organisms, we may possibly convert the more active constituents of this waste liquor into products harmless to fish life or marine vegetation and thus find a means of disposing of the waste organic solids in a form which would have no serious effects when discharged into the streams or waterways.

3. All vegetation is a storehouse of solar energy. By the capture of solar energy and the utilization of that solar energy, the plant grows and develops. In growing and developing, the plant stores this solar energy in a form which may later be released for man's benefit. We should keep in mind the basic fact that all of the energy which we as human beings utilize in carrying on our complex economy comes from the sun. Whether we use it as water power which represents water evaporated by solar energy from the sea, carried to high land elevations by the winds and finally dropped as rain or snow, eventually to find its way through the streams to the sea again and in the process utilized by man to generate electric power; or coal which represents solar

energy captured in past geological ages by the vegetation at that time covering the earth and stored in a modified form as our great coal deposits; or oil from whatever source we may finally decide, again a definite storehouse of solar energy of past geological ages. Finally, we have the vegetation of the present day continuously absorbing energy from the sun and storing it in one form or another as vegetation useful to man's many needs.

To return now to the first possible utilization of the organic material in waste sulphite liquor, many attempts have been made to chemically change these organic materials to produce products of value. The number of products which have at one time or another been produced commercially, or proposed, is surprisingly large yet the use of these products is relatively limited when we take into consideration the tremendous tonnage of organic solids which are available as the result of our very large production of sulphite wood pulp. The following list comprises the principal products which so far have been investigated or proposed:

Alcohol by fermentation of waste liquor; yeast produced by the fermentation process; vanillin from the lignin present in waste liquor; oxalic acid; tanning material; road binder; special cement, such as linoleum cement; Portland cement accelerator; core binder; and plastics from the lignin present in sulphite waste liquor.

#### Products Market Limited

● Many of the products mentioned above are in commercial production either in this country or in other countries where the sulphite process is used. Alcohol has long been produced by sulphite mills in Europe. The mills in this country have never taken up the manufacture of alcohol from sulphite waste liquor because the low yield and high cost of production have made alcohol from this source more expensive than that produced from blackstrap molasses and from waste refinery gases from the petroleum industry. Furthermore, only about twelve or fourteen per cent of the total organic solids already in the waste liquor are converted into alcohol by fermentation. We still have to dispose of 86% to 88% of the total organic solids which are not converted into alcohol. The production of yeast from sulphite waste liquor, while offering a large potential market as a source of fodder rich in nitrogen, still utilizes only a relatively small portion of the total solids present in the waste liquor and we still have an acute disposal problem.

Vanillin, which is the chemical compound responsible for the flavor of the natural vanilla bean, may be produced by chemical processes from sulphite waste liquor. In this process, however, only a small portion of the total organic material is utilized and the chemical cost of converting this small portion into vanillin is high. It, theoretically, is possible to produce enough vanillin to satisfy the entire need of the United States from the waste liquor resulting from the production of 30 tons of sulphite wood pulp per day. At this point, we should mention that the usual size of a mill which can operate economically is not much less than 100 tons per day. It is evident that the vanillin requirements of the entire United States could readily be satisfied with the waste liquor resulting from only a part of the production of one individual mill.

Oxalic acid may be produced from sulphite waste liquor under proper conditions of chemical control and the yield obtained is reasonably high. But here again, the production from one comparatively small sulphite pulp mill would probably satisfy the demands of the entire country. The same is true of tanning material,

## PACIFIC PULP & PAPER INDUSTRY

linoleum cement and other products which have been proposed.

Many writers feel that we now are in the plastic age and many proposals have been made by those not familiar with the sulphite pulp industry to use the lignin present in the waste liquor for the production of plastics. It is perfectly true that lignin, as it exists in wood, might be utilized as some type of plastic base. However, the nature of the sulphite process is such that the lignin, when rendered soluble, is no longer chemically suited to the production of satisfactory plastics. Future research may find a way to modify the lignin present in waste sulphite liquor by chemical means in such a manner as to render it useful as a raw material for plastics but so far this has not been accomplished for plastics.

In concluding our discussion of the possibilities of the chemical utilization of the organic material in sulphite liquor, it should be remembered that for every ton of wood cellulose produced there is approximately one ton of waste organic material produced. The production of sulphite pulp in the United States amounts to 3,062,000 tons per year; in round numbers, 10,000 tons per day which means that we have to find means of disposing of approximately the same amount of waste organic material, a stupendous task and a problem not easily solved because of the tremendous tonnage involved.

If we render the organic material present in waste liquor harmless to fish life and marine vegetation, we still are discharging into the streams a potential source of energy of enormous magnitude. The problems involved in rendering this material nontoxic are many and complex and even were it possible of relatively simple accomplishment, we still would be wasting stored solar energy.

#### Conversion into Energy

● This brings us to the final consideration which offers a solution to the waste liquor problem by conversion of this solar energy into a form of energy immediately useful in our daily lives.

When we set out to produce sulphite cellulose from wood, one of the first requirements is a satisfactory source of steam and power for the process. To produce steam and generate power, we must use some form of stored solar energy—in other words, we must use coal, oil, hydroelectric power, or some form of energy, to produce from wood chips the sulphite wood pulp which enters so many phases of our everyday modern life. We may use waste wood for the generation of steam but in so doing, we convert not only the non-cellulosic portion of the wood into steam and power but also the cellulosic portion of the wood. If, therefore, we have as a waste product the non-cellulosic portion of wood already isolated, we may utilize this by converting its stored solar energy into a form of energy which we can use, namely: steam and power and render available more wood for the production of cellulose.

It has been stated previously that the total sulphite pulp production in this country amounts to approximately 10,000 tons per day. We have accurate figures on the heating value of the waste organic solids which are produced in the course of manufacturing this 10,000 tons of pulp. It is interesting to note that when we convert this amount of waste organic material into its equivalent energy in the form of kilowatt hours, we have a potential source of energy equivalent to 43,464,000 kilowatt hours per day. The present maximum generating power of both Grand Coulee and Bonneville Dams is 20,000,000 kilowatt hours per day. This com-

parison gives some idea of the tremendous amount of energy available in the organic solids contained in the sulphite waste liquor.

For many years, attempts have been made to evaporate and burn sulphite waste liquor resulting from the use of acid prepared from the cheap lime base. This problem, however, presents several very difficult chemical engineering problems. In the first place, the evaporation of a lime base sulphite waste liquor is always accompanied by scale formation in which lime compounds are deposited in the evaporators used to concentrate the liquor, thus reducing their efficiency and requiring frequent and expensive maintenance. Furthermore, when finally evaporated and burned, the sulphur and lime present in the waste liquor are lost in the form of an ash of little value.

#### Eliminates Scale in Evaporators

● Eight or nine years ago, three organizations attacked this problem from substantially the same point of view. That is, they proposed to change from the commonly used calcium base to a base consisting of magnesium for the production of the cooking acid. When the waste liquor produced in the cooking of wood with a magnesia base acid is evaporated, no scale is deposited in the evaporators. When the evaporated liquor is burned, the magnesia present in the waste liquor is recovered as an ash in the form in which it is originally used to make the cooking acid, namely: Magnesium oxide. The sulphur present in the waste liquor passes off as sulphur dioxide in the combustion gasses. In a properly designed plant, the ash from the furnace may be mixed with water and combined with the sulphur dioxide in the combustion gases to re-form a cooking acid which may again be used for the production of pulp.

It will readily be seen that the process which has just been described not only does away with the stream pol-

lution problem but also utilizes the energy stored in the organic compounds present in the waste liquor for the production of steam and power, necessary raw materials for the manufacture of pulp. Furthermore, it recovers the chemicals utilized in the pulping process for the pulping of additional quantities of wood.

This process, as mentioned above, was simultaneously developed through the efforts of G. H. Tomlinson, technical director of the Howard Smith Paper Company in Cornwall, Ontario, the Babcock & Wilcox Company, manufacturers of steam generating equipment, and the Pulp Division of the Weyerhaeuser Timber Company, manufacturers of sulphite pulp in the state of Washington.

Independent pilot plants were operated over a sufficiently long period of time to demonstrate the practical value of the process and to work out the necessary engineering details for the design of a full scale plant.

The outbreak of the war has temporarily prevented the building of a full scale plant because of the critical material needed in its construction. When this critical material is available, a plant will be constructed and its practical value, both as a means of solving the pollution problem and utilizing the energy and chemicals present in the waste liquor will be demonstrated.

As time goes on and as more intimate knowledge of the chemical constitution of the organic products in waste sulphite liquor is obtained, it is possible we shall find outlets for chemical products which may be produced from these complex organic compounds. This phase of the problem involves long, expensive and painstaking research. In the meantime, we have within our grasp a means of utilizing the stored energy of these organic compounds in a manner useful to industry and of recovering the chemicals which are now being lost.

## Newspapers Support Program For Closer U. S.-Canada Relations

● Under the heading "Getting Together," the Victoria (B. C.) Times published a recent editorial commenting on the Pacific Northwest Trade Association meeting in Spokane in December and the stand taken by Miller Freeman, publisher of PACIFIC PULP & PAPER INDUSTRY, in advocating removal of trade and travel restrictions between United States and Canada. The Times said:

"The discussions revealed a mutuality of interests in many fields. And the whole of the Pacific Northwest owes a special word of commendation to Mr. Miller Freeman, the well-known Seattle publisher of the many excellent and progressive publications which bear his name, whose initiative and indefatigable labors in consistently emphasizing the association's objective cannot be too highly regarded.

"Of particular importance to all those who attended the Spokane conference was the question of getting a 'feeder' route built through British Columbia to the Alaska Highway. The siphoning off of trade from this far northwestern territory of the United States to the east by way of Chicago already has reached what the American delegates described as nothing short of alarming. . . .

"As the Spokane Spokesman-Review says editorially, 'the Northwest Trade Association proposes that these states, provinces and territories work together in peace as they are working together in

war to promote their common interests.' To this end, therefore, its program contemplates removal of all trade and immigration barriers between the United States and Canada, equalization of American and Canadian currencies, abolition of censorship between the two countries, planning of a program of permanent defense for the north Pacific region and association of official agencies and civic organizations on both sides of the boundary in the general scheme for building up this great empire. And to all of which every British Columbian will add a resounding Amen; for, willy-nilly, our lot in the Pacific Northwest is going to be closely associated with that of our neighbors on the immediate south."

#### Dr. Swain at Camas

Dr. Robert E. Swain, professor emeritus at Stanford University, California, visited the Central Technical Department of Crown Zellerbach Corporation, for three days in late December. Dr. Swain is a member of the consulting staff of the Crown Zellerbach research division.

#### James B. Hyde In East

James B. Hyde, of the waxed papers division of Crown Zellerbach Corporation, spent some time in the east on business during November. His office is in the Central Technical Department at Camas, Wash.



MRS. HELEN SCANLON SAMPLE, of Minneapolis, first woman director of the Powell River Company, was appointed recently to take the place of her husband, GLEN SAMPLE, who is now on active service in the South Pacific as a Lieutenant Commander in the United States Navy. MRS. SAMPLE is a daughter of the late M. J. SCANLON, who with the late DR. DWIGHT F. BROOKS, founded the Powell River Co. She has been a frequent visitor to the British Columbia paper town since early girlhood.

Her brother, ROBERT H. SCANLON, with her in the above photograph, is also a director of the company.

## \$200,000,000 Modernization Program Predicted for U. S. Pulp & Paper Industry

RICHARD BUCKLEY of Fernstrom tells PASC meeting in Los Angeles that 150 different kinds of items will be purchased . . . BRUCE BROWN, JR., of Fibreboard Products Inc., discusses "Some Questions on Paperboard Sizing" . . . Postwar role of synthetic rubber is subject of another talk.

**A**S A FINAL 1943 get-together—one which equalled and possibly exceeded in interest any other of their gatherings during the year—thirty-four members and guests of Papermakers and Associates of Southern California held a dinner-meeting in Rosslyn hotel, Los Angeles, on Thursday evening, December 16. Considering the nearness of the approaching holiday season, it was a good-sized turnout.

Otto Sass and his program committee arranged to have Bruce F. Brown, Jr., chief chemist, Vernon Division, Fibreboard Products Inc., Los Angeles, handle the subject "Some Questions on Paper Board Sizing," which was done in classroom style. High interest also was developed by the illustrated talk of H. R. Erwin, chemical engineer of Goodyear Synthetic Rubber Corp., whose subject was "Synthetic Rubber."

Another feature consisted of the first of a series of reports on events of current nature, delivered by Richard S. Buckley, chief chemist of Fernstrom Paper Mills, Inc., Pomona, Calif. This is an innovation approved at the previous meeting, under which a different reporter at each meeting will give the results of his investigations of such matters as processes, materials and/or current events which concern paper making.

That the idea has great merit was demonstrated by Mr. Buckley, who spoke of pulp shortages. Evidently he had done considerable research, as his audience was soon hearing vital statistics and pencils began to fly as the revelations proceeded. He pointed out the seriousness of the pulp shortage, quoted production figures and cited the decrease in wood cutting. His studies had revealed that in the post-war period more than \$200,000,000 will have to be invested in plant modernization in the United States pulp and paper industry with at least 150 different kinds of items to be purchased.

Judging by the character of the information supplied by Mr. Buckley and the reception given it, these five-minute reports are going to be very helpful, with the lead-off report setting a high standard.

### Talk on Synthetic Rubber

● While papermakers are ever interested in the rubber supply, because of the extensive use of rubber covered rolls in their plants, the talk of Mr. Erwin was in the nature of a revelation of the part synthetic rubber is destined to play in after-the-war transportation and industrial uses. By reference to a large diagram hung on the wall back of the speaker's table, he explained how synthetic rubber is made and pointed out that the product has unique properties which make it better adapted for certain jobs than the natural rubber.

Mr. Erwin called attention to the rapid progress that has been attained in the improvement of quality, saying that at the beginning of the synthetic rubber program the tendency was to simulate the methods used in producing rubber from natural raw materials. Having no precedent to follow, this course was pursued until it was learned that synthetic rubber requires its own special production methods.

Furthermore, there are several types of synthetic rubber and it has been found necessary to divide on a middle-of-the-road type that meets the most common needs. Mr. Erwin explained that this type stems from two components, butadiene and styrene, which are put through various kinds of equipment to form the emulsion called latex, which is later coagulated to become rubber. Samples of crude and finished products were passed about the room for inspection.

The synthetic rubber program was developed in the spring of 1942, when the Baruch committee reported that the country would need about 1,000,000 long tons of the product. Mr. Erwin stated that synthetic rubber plants at present can produce about three-fourths of this quantity. As to the post-war future of synthetic rubber, much depends on the supply and price of natural rubber, therefore an accurate forecast cannot be made at the present stage.

### Bruce Brown Jr.'s Talk

● Bruce Brown, Jr., reversed the usual procedure by delivering a prepared address comprised largely of

questions for which he requested answers from the audience. Under this plan he gave his own comments on fifteen technical phases of rosin sizing of paper board, asked his audience to take notes as he went along and then give their individual opinions at the end of his discussion.

The idea was a "natural," and for about two hours the group was engrossed on the important and sometimes controversial angles brought out—to such an extent that not even the din of a very noisy party in the adjoining room could diminish the ardor of these gentlemen, bent on bringing to conclusions the highly interesting morsels of study that had been laid in their laps.

Mr. Brown's own comments are contained in an article on page 23 in this issue. The fifteen questions he chose for discussion appear at the end of this article.

### Joe Hartford Presides

● J. E. (Joe) Hartford of United States Gypsum Co., presided as program chairman. It had been previously announced by William A. Kinney, association chairman, that Dick Buckley, of Fernstrom Paper Mills, Pomona, had been appointed a member of the executive committee to take the place of Kenneth H. Bearss, who had resigned and was reported to have returned to the East.

It was also announced that Charles G. Frampton, superintendent, of Fernstrom Paper Mills, heads the committee which will prepare a history of paper making in Southern California. Other members of this committee are Bruce Brown, Harold Brown and John Van Ounsem. Mr. Frampton was prevented from attending the meeting by a local school affair in Pomona on the same evening, in which one of his sons was participating. Another son, Capt. Keith Frampton, was killed in action recently while piloting a bomber at Bougainville (PACIFIC PULP & PAPER INDUSTRY, December issue, page 22).

Secretary-Treasurer John Van Ounsem, of Pioneer-Flintkote Co., reported that six new members have recently joined the association.

### Attendance List

The following members and guests were present at the December 16 meeting:

H. W. Aitchison, California Container Corp.; Robert A. Baum, Fernstrom Paper Mills, Inc.; Herman L. Berg, California-Oregon Paper Mills; C. G. Berneking, Philadelphia Quartz Co. of Calif.; Howard Bidwell, Pioneer-Flintkote Co.; Bruce F. Brown, Jr., Fibreboard Products Inc.; Richard S. Buckley, Fernstrom Paper Mills, Inc.; V. P. Cole California-Oregon Paper Mills; Robert E. Cooper, U. S. Rubber Co.; G. E. Eberhard Fibreboard Products Inc.; Asger Eilersgaard Pioneer-Flintkote Co.; H. R. Erwin, Goodyear Synthetic Rubber Corp.

H. A. Hackett, mechanical engineer; Gordon G. Halvorsen, The Dicalite Co.; Lt. Vernon A. Halvorsen, U. S. Army Air Corps, Armament Division; A. L. Hamler, California-Oregon Paper Mills; J. E. Hartford, United States Gypsum Co.; John Herbert, Blue Diamond Corp.; Stoney Hill, California-Oregon Paper Mills; J. W. Jamison, Rheem Mfg. Co.; William A. Kinney, The Pioneer-Flintkote Co.; William J. Krodell, Pioneer-Flintkote Co.; C. R. Kyle, Philadelphia Quarts Co. of Calif.; Harry Lilburn, California-Oregon Paper Mills.

Frank H. Mark, Western Asphalt Association; E. W. Odenwaldt, United States Gypsum Co.; Stanley Parker, Fibreboard Products Inc.; Arthur W. Ponsford, Pacific Pulp & Paper Industry; Guy Pulley, Pacific Pulp & Paper Industry; Otto Sass, Pioneer-Flintkote Co.; Edward J. Shaugnessy, Pioneer-Flintkote Co.; William Sheehan, Pioneer-Flintkote Co.; John Van Ounsem, Pioneer-Flintkote Co., and Frank H. Wheelock, Fibreboard Products Inc.

### J. D. Zellerbach Elected NAM Vice President

● Reflecting honor for the entire coast pulp and paper industry as well as a personal tribute, J. D. Zellerbach, president of the Crown Zellerbach Corporation of San Francisco, was recently elected national vice president of the National Association of Manufacturers for 1944.

### Kelly and Richmond Address Paper School

Harry Richmond, chief engineer of Electric Steel Foundry, Portland, lectured to members of 3rd and 4th year classes of the Crown Willamette Paper School at Camas, Wash., on "Metallurgy," January 5.

Norman Kelly, manager of the Longview, Wash., mill, Division Weyerhaeuser Timber Company, discussed "Special Developments in Sulphite Pulping" to members of the 2nd year class of the school on January 6.



SCENES AT PASC MEETING in Rosslyn Hotel, Los Angeles, December 16, 1943.

Top—Left to right: DICK BUCKLEY, Fernstrom Paper Mills, who made a report on prospective postwar spending in the industry; WILLIAM A. KINNEY, Pioneer-Flintkote Co., Chairman of the Executive Committee; H. R. ERWIN, Goodyear Synthetic Rubber Corp., who discussed synthetic rubber after the war; JOE E. HARTFORD, United States Gypsum Co., Program Chairman; BRUCE F. BROWN, Jr., Fibreboard Products Inc., who discussed paperboard sizing, and GORDON G. HALVERSON, The Dicalite Co.

Middle—Left to right: FRANK H. WHELOCK, Fibreboard Products Inc.; CHESTER R. KYLE, Philadelphia Quartz Co. of California; Mr. KINNEY, and (with his back to camera) E. W. ODENWALDT, Manager, United States Gypsum Co. In right inset is JOE HARTFORD, Program Chairman.

Below—STANLEY PARKER (left), Beater Engineer, Fibreboard Products Inc., watches JOHN VAN OUNSEM, Pioneer-Flintkote Co., performing his duties as Secretary-Treasurer.

### Isaacson Returns from War

Arthur Isaacson, pulp grader for the Puget Sound Pulp & Timber Company, is the first veteran of the overseas forces of Uncle Sam to return to his position at the big Bellingham, Wash., mill. Art saw U. S. Army service in North Africa, landing with the initial group which took over Oran.

### Sgt. Roy Cole Killed

Sgt. Roy Cole on leave from Longview Fibre Company of Longview, Wash., was killed in action in the Mediterranean area. He is the son of Mr. and Mrs. John Cole of Cornell, Wis. He was about 30 and had been in the Army two years. He came to Longview about 10 years ago from Wisconsin.

## Pacific Section of TAPPI Meets in Everett, February 1

● The Pacific Section of the Technical Association of the Pulp and Paper Industry will hold its second dinner meeting of the 1943-44 season on Tuesday evening, February 1, at the Everett Golf and Country Club, Everett, Wash.

Because of war travel difficulties and limitations on supplies and services for such affairs, the TAPPI meetings have been few and far between. Instead of the usual monthly dinner meetings, the Everett event will be the only one held this winter and spring. There is still no certainty that the annual joint spring meeting of TAPPI and Coast Superintendents can be held.

At the February 1 meeting, the principal speakers will be Joseph L. McCarthy of the Chemistry Department, University of Washington, who will discuss "Polymers and the Pulp and Paper Industry," and E. H. Nunn, technical supervisor, Crown Zellerbach Corp., West Linn, Ore., whose subject is "Subtractive Effect in Dyeing Paper."

Another feature of the meeting will be the presentation of a color movie entitled "This Plastic Age." This film has had more than 400 showings before such groups as the Society of the Plastic In-

dustry, The Society of the Chemical Engineers, a special service depot, an Army signal laboratory, a Navy yard, war plants, research laboratories, and various clubs. The movie has been widely praised for its artistic photography and for giving an excellent background of the entire plastics field to which the pulp and paper industry is an important contributor.

The program has been arranged by Erik Ekholm, general superintendent, Puget Sound Pulp & Timber Company, Bellingham, Wash., who is vice chairman of the Pacific Section of TAPPI.

H. W. Bialkowski, technical director, Everett, Wash., mill, Pulp Division, Weyerhaeuser Timber Company, has made local arrangements for the dinner.

Fred Armbruster of Seattle, representative of the Dow Chemical Company, is arranging for presentation of the film.

Robert M. True, General Dyestuff Corporation, Portland, Ore., as secretary-treasurer of the Pacific Section, is sending out the notices of the meeting.

Clarence A. Enghouse, assistant resident manager, Crown Zellerbach Corporation, West Linn, Ore., is chairman of the Pacific Section. Serving with him on the executive committee are Mr. Ekholm, Mr. True, Mr. Ed P. Wood, technical director, Longview, Wash., mill, Pulp Division, Weyerhaeuser Timber Company, and W. F. Holzer, central technical department, Crown Zellerbach Corporation, Camas, Wash.

### TAPPI DINNER MEETING Pacific Section

**The Place**—Everett Golf & Country Club, Everett, Wash.

**The Day**—Tuesday, February 1.

**The Time**—Six thirty p. m.

**The Speakers**—Joseph L. McCarthy, Chemistry Department, University of Washington, and E. H. Nunn, Technical Supervisor, Crown Zellerbach Corp., West Linn, Ore.

**Colored Movie**—"This Plastic Age."

## Tom Murray Becomes Associated With St. Regis As Result of Timber Deal

● Culminating more than 30 years of effort and experience in the logging and timber industry of the Pacific Northwest, L. T. "Tom" Murray, Tacoma, Wash., president of the West Fork Logging Company, has become associated with the St. Regis Paper Company.

In the December issue of PACIFIC PULP & PAPER INDUSTRY, it was announced that the St. Regis Company has acquired timber of the West Fork Logging Company at Mineral, Wash., one of the finest stands in the west, thereby enabling the Paper Company, Tacoma, Wash., kraft mill to resume operations early in 1944. The mill had been closed since November 1, 1942, as a result of the WPB allocation order arising from the log shortage.

Walter DeLong, vice president and manager of the Tacoma Division of the St. Regis Paper Company, announced that Mr. Murray has become associated with the paper firm. Mr. DeLong said he would call upon Mr. Murray for advice concerning utilization of the West Fork wood resources.

The contract on cutting rights requires full and complete adherence to the best practices of selective logging and sustained production of timber. General cutting rules have been established which are designed to insure continued crops of timber.

Mr. Murray has long been interested in forestry and conservation from a practical point of view and this contract is concrete evidence of his vast knowledge of forestry technique and his intense desire to have the forestry practices he has initiated carried on in perpetuity.

### Contract Is Unusual

This contract has no precedence in the history of United States timber resources owned by private enterprise. It will serve as a model for many years to come not only for other private concerns



L. T. "TOM" MURRAY, of Tacoma, Wash., president of the West Fork Logging Company, who has become associated with the St. Regis Paper Company, Kraft Pulp Division. Granting St. Regis perpetual cutting rights on a sustained yield basis to his extensive holdings near Mineral, Wash., Mr. MURRAY will advise with WALTER DELONG, Vice President of the St. Regis Kraft Division, on the utilization of the timber.

to follow but also in the cutting of public stumpage. The principle of sustained yield as applied to the lands and timber and the operators under their contract will call for all measures needed for growth of merchantable timber and or wood at least equal to the average annual cut to the end that industry resulting thereby will be maintained and sustained.

Involved in the transaction are approximately 45,000 acres of West Fork Timber Company lands with upwards of 65,000 acres of public lands intermingled and tributary.

The major portion of the Tacoma plant's requirements of 100,000,000 feet per year will be met by the paper company's new cutting rights at Mineral. The Puget Sound Plywood Company of Tacoma will continue to receive their supply of logs from this source.

Some of the more important direct economic advantages will be permanency of the community of Mineral through permanent payrolls and the maintenance of tax rolls and tax values in that part of Lewis County, maintenance of public transportation and industries which use the growth of forests for their raw material, preservation of wild life and esthetic values and the protection of water sheds.

The West Fork Logging Company organized by Mr. Murray in 1911 has been dissolved and all assets other than the logging facilities at Mineral have been turned over to the West Fork Timber Company.

The West Fork Timber Company will continue as an active organization under

the management of Mr. Murray. One of its most interesting programs will be to carry on research on new and better methods of logging, particularly with small and light equipment. Its object will be to develop methods of removing the waste of present logging systems and to carry on thinning of young stands on an economical basis.

#### Mr. Ferguson's Statement

"A tremendous step has been taken toward solving the nationwide paper shortage, particularly in the field of paper containers," said Roy K. Ferguson, president of St. Regis Paper Company, in commenting on acquisition of all logging operations of the West Fork Timber Company.

"The tract," said Mr. Ferguson, "is one of the largest stands of fir and hemlock in the country and is 45 miles from the Tacoma pulp mill. The magnitude of the acquisition can be more fully appreciated when it is recognized that St. Regis now owns and controls more than five billion standing feet of timber in the Pacific Northwest.

"For eight years selective logging has been the basis of operation. Continuation of this modern and scientific method by St. Regis will insure the retention of all of the natural beauty and utility of this vast tract, and at the same time guarantee millions of feet of the same high quality timber for generations to come.

"This West Fork timber not only assures St. Regis ample supplies of pulpwood in perpetuity," he said, "but the re-opening of the Tacoma pulp mill, which is expected to take place within the next sixty days will enable St. Regis to meet the increased demand for pulp, which will result in additional specification kraft paper being available to other bag factories, as well as to the twelve bag plants of the St. Regis Paper Company."

#### 475 Attend Reunion Of Bellingham Mill

● The Eighth Annual Reunion of the Puget Sound Pulp & Timber Company was held at a banquet and dance in Bellingham, Wash., on January 1. Over four hundred and seventy-five attended the huge gathering as guests of the management of the company. Lawson Turcotte, executive vice president, was toastmaster. Ralph Roberg, sales manager and vice president, and Erik Ekholm, general superintendent, addressed the gathering. Carl Knutson, president of the Local 194, International Brotherhood of Pulp, Sulphite and Paper Mill Workers, read the names of more than one hundred mill employees now serving in the armed services.

The program committee consisted of Gus Okerlund, personnel manager, Fred Gilmore, machine room foreman, and Sidney Collier, sulphite foreman.

As a Christmas gift, according to annual custom, fifteen pound turkeys graced the tables of all the employees with the compliments of the management. Over three hundred turkeys paid the supreme sacrifice.

#### Bonds for Service Men

No. 2 finishing room at the Crown-Zellerbach mill, Camas, Wash., has sent out to every one of the former employees of that department who is in the armed forces a present of one United States War Bond. Foreman of the department is Cecil Knapp.



A. G. BENNETT, of the Pioneer Division of The Flintkote Company, 5500 S. Alameda St., Los Angeles, who is prominent in flood control work in his community of Altadena, Calif. He performed courageous service during the three-day flood in his home community early last year. More recently as President of the Rubio Canyon Flood Control, he was able to get construction work begun on a dam that is expected to prevent a repetition of the flood when high waters endangered lives of residents. Mr. Bennett worked at rescuing trapped people for 48 hours several times, endangering his own life.

#### Weyerhaeuser News For Service Men

A semi-annual news letter, containing items of interest contributed by each of the various departments of the Pulp division of Weyerhaeuser Timber Company, Longview, Wash., was this year sent to all service men from that division during the Christmas season. In all, 13 pages of letters, and 3 pages of signatures, were included. This issue was printed on a Ditto duplicator.

The same type of letter was printed in newspaper form last June, with photographic illustrations, and sent to the employees on leave in the armed forces.

#### C-Z Women's Basketball Team In Race Again

● A women's basketball team which represents the Crown Zellerbach mill at Camas, Wash., has taken to the court again in the Portland Women's League, winning five and losing two of its first seven games. The team from this mill won the league pennant for two previous seasons. But this year, recent standing showed it trailing Jantzen Knitting Mills and the Sacred Heart team.

Crown Zellerbach mill players include: Eleanor Evanson, Idella Evanson, Irene Buhman, Sal Stenchjem, Sybil Shirley, Loraine Holter, Opal Holtzer, and Opal Kindred, with Olive Jacobson as manager. Oddly, all of the girls came originally from North Dakota, either at Arendgard where 7 formerly lived, or at Wing.

#### Arthur Zimmerman Dies In Longview

● Arthur C. Zimmerman, 47, retired vice president and general manager of the Pacific Paperboard Company, Longview, Wash., died in a Longview hospital on December 27, 1943. He had been ill for several months. Zimmerman came to Longview in 1929 to become associated with Pacific Straw Paper and Board Company, the name of which was changed upon reorganization a few years ago to Pacific Paperboard Company.

His experience in the pulp and paper business started in Michigan and continued through service with paper firms in Ohio, Louisiana and Texas, before his affiliation with the Pacific Coast industry. His father, Max Zimmerman, also is well known in the industry as a manager of board mills.

Born in Neenah, Wis., Mr. Zimmerman was 47 years old.

His long experience in the pulp and paper industry started in Ostego, Mich., where he was employed by the Max Sim Bar Paper Company. He later was associated with the Boldt Paper Company in Cincinnati and New Liberia, Ia., and before coming to Longview was with the E. T. Fleming Paper Company at Dallas, Tex., as superintendent.

Surviving are the widow, Mrs. Myra Zimmerman; two sons, Max Gilson and Arthur Kohler Zimmerman, Longview; his parents, Mr. and Mrs. Max Zimmerman, and a brother, Oscar Zimmerman, all of Lockport, N. Y.

The body was taken to New Orleans for burial.

#### Booklet for Service Men

Done in mimeographed form, a Christmas booklet containing office personnel news, sports news, humor, news of men in the armed services, and poetry, was sent to all former office employees of the Crown Zellerbach Camas, Wash. mill, now in the service. A humorous sketch by Frank Sill of the bag factory office was included.

#### Hawley Xmas Party

The annual Christmas party at Hawley Pulp and Paper Company, Oregon City, Ore., occupied the afternoon of December 24. Office workers and foremen, 60 in number, enjoyed the festivities. A visitor from the armed forces was Vernon L. Tipka, former research engineer and TAPPI member.

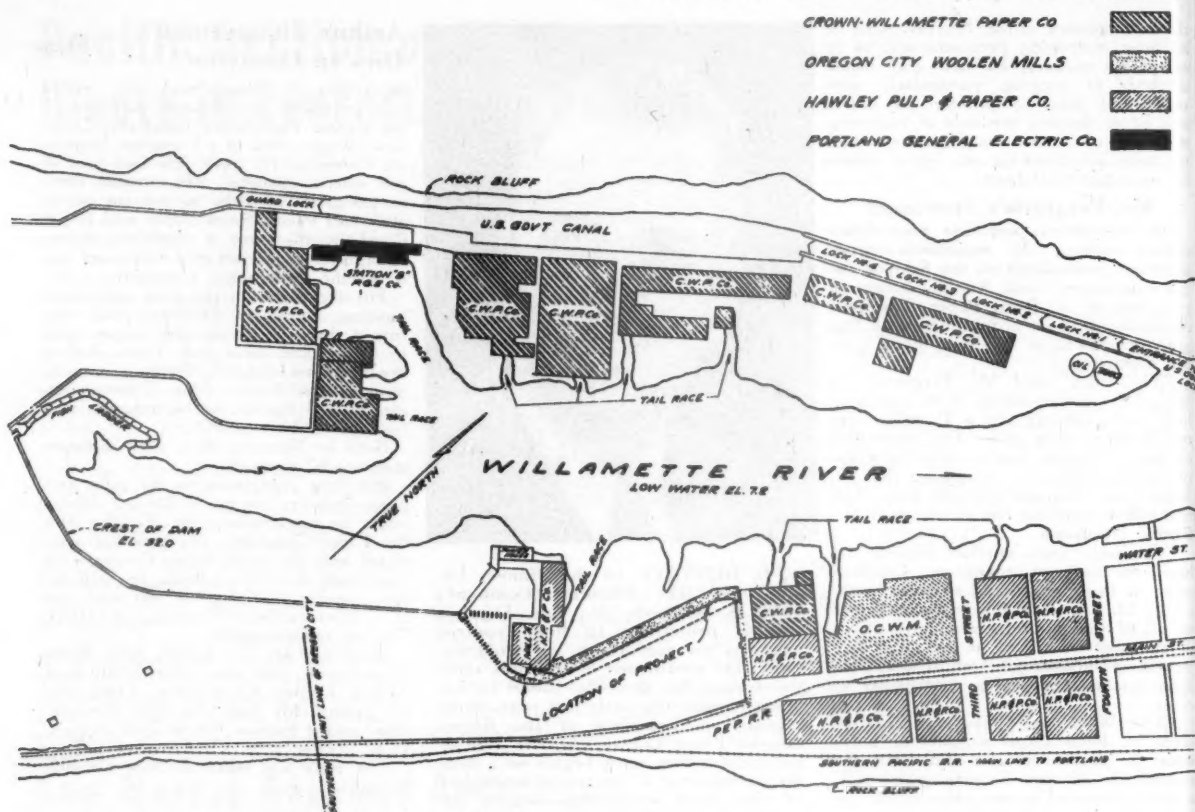
#### Weyerhaeuser Party

On December 24, the Lumber Division office force was host to the Pulp Division office force of the Weyerhaeuser Timber Company at Longview, Wash., at a Christmas gathering. The entertainment included a buffet luncheon, group singing, and a Christmas tree. About 125 office workers participated.

The event occurs annually, with the host status changing to the opposite group each year.

#### Spaulding Mill Employees Have Fine Bond Record

● The 151 employees of the Spaulding Pulp & Paper Company at Newberg, Ore., have been regularly contributing over 10 per cent of their income to war bonds but they hit a high figure of 29.05 per cent in the special September campaign. This amounted to total purchases of \$7,888 in bonds in that month.



## New Concrete Dam Defends Mills Against Future Willamette Floods

Pictures tell story of construction of 875-foot span at Oregon City. About a half million dollars are spent on restoration and improvements. New dam, with overall height of 55 feet, has 17 piers with slots to provide water for Hawley's Mill A. (For other pictures of the flood see PACIFIC PULP & PAPER INDUSTRY, January, 1943).

THE high water which raced down the Willamette River bed on January 2, 1943, scattering logs from Salem to the sea, inundating pulp and paper mills, and creating economic havoc, dug deeper than it knew. The flood actually unearthed the past for a full one hundred and ten years—a long time for such a new country as this, and possible only at Oregon City. For during reconstruction, with cofferdams in place, and water no longer troublesome, someone uncovered the original rock work done under Dr. John McLaughlin's direction on a tail-race for his sawmill and grist mill.

McLaughlin himself wrote this note, "In the year 1832, I had a mill race blasted out of the rocks, from near the head of the island which Mr. Thurston calls Abernathy Island. . . ."

This, and still earlier and later facts in relation to Willamette Falls

were recently recorded in a window of the Portland General Electric building in Portland, Ore., as a display to celebrate completion of an 875-foot concrete dam to replace the former crib work which went out under the onrush of the New Year, 1943, flood.

A treaty of Alexander Ross with the Indians of the vicinity in 1816 which opened the falls to white men is the initial fact in the history of the river at this site. Another relic records a hand compass survey of the falls as having been completed by Moss in 1847. And a later history of 1889 names electricity generated by the Willamette Falls Electric company at the falls and carried 13 miles to Portland as the first long distance high tension transmission in the world. Mention of the floods of 1890, 1907, 1923, and 1942 was not included, but these disasters also were important events in Oregon City's history. It is to prevent any future disasters of such severity, that

the new all-concrete dam has been built.

This window display of historical material and little known information was collaborated in by the Oregon Historical Society, under direction of Lancaster Pollard, new superintendent, and exhibited by Portland General Electric which utilizes the volume of water for hydro-electric power.

### Crib Lasted 35 Years

● In the flood just a year ago, 150 feet of rock filled crib which crossed a portion of the Willamette River at the end of the Hawley Pulp & Paper Company's log boom and which stood between its two operating mills, went downstream after 35 years of usefulness. This crib, originally built in 1908, linked up with a concrete structure above the main Hawley plant on its east end, and on its westerly end upstream, tied into an all-concrete dam which extended above Hawley Mill A up-

river and down again in a parabolic curve to Crown-Zellerbach Corporation properties at West Linn which surround the hydro-electric plant of Portland General Electric. The rock crib thus remained the weakest link in a chain by which water was impounded upstream. With its giving way, some of the value of the dam as an impounding agency was destroyed. This meant economic loss to the power company and to the two pulp and paper mills until adequate repairs could be made. The Hawley Pulp & Paper Company was in the least favorable position, but at no time was it completely "down" because of the flood, although Mill A will show a big decrease in production in 1943, according to Carl E. Braun, vice president and mill manager of the Hawley company.

Initial reconstruction work started on January 3, within 12 hours after the break, when Gilpin Construction Company floated timbered cofferdam sections into place and sank them according to prearranged plan by dumping rock from the West Linn hills to weight the sections down. Timber for this stop-gap, nearly a quarter of a million feet new and old, had to be gathered here and there without priorities and as rapidly as possible. But by April 20 this job had been done. By this impediment, water in the east basin was diverted over other sections of the falls.

With the heavy flow of water conquered, rubbish cleared away, and the site surveyed, construction began, following blue prints of John Bankus, chief engineer of the Portland General Electric Company, which were ready when the contrac-

tor put his crew on the job. (Incidentally, John Bankus happens to be the brother of Albert Bankus, of San Francisco, vice president in charge of operations of Crown Zellerbach Corporation.)

Two engineering problems were involved: First, to control the water so Hawley Mill A would not suspend operations entirely nor would the other mills or the power company suffer complete curtailment of direct water power on which all depended; second, to engineer a dam into a space which proved inadequate for the spread of a full gravity dam (which was solved by building a gravity dam on top of an arch dam).

Engineering details called for construction of about 875 feet of concrete dam to replace the damaged structure. One portion had to differ from the remaining construction in that 17 piers with water slots had to be provided to permit a head of water to reach Hawley Mill A. These huge piers are so built that in the event the Hawley mill needs the flow of water stopped, stop logs can be rapidly placed, extending from pier to pier, to accomplish this. Other than here the dam presents an unbroken line of concrete from shore to shore in a peculiar curve built to conform to nature's excavation. Perpendicular height of the old dam is 55 feet from foundation to top. The newly built section naturally attains an identical surface elevation, with an overall height of 55 feet, poured in five foot lifts.

#### Dam Completed November 17

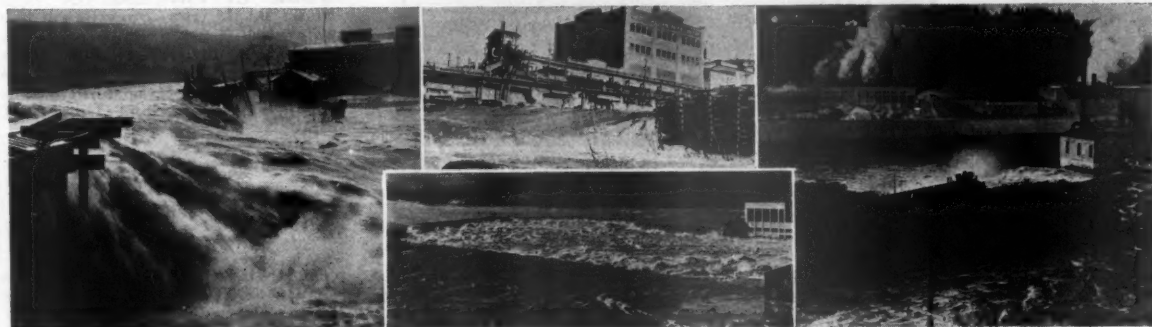
● Methods of construction differed in one detail. The usual way of

supplying concrete for the pours was displaced for the newer method of supplying it by pumps through a 6-inch pipe. A little time was lost in learning how to control the system, but after slight delays operations were successfully conducted at some places for distances as great as 400 feet.

Despite the shortage of labor, especially among experienced rock men, the dam was completed and delivered on November 17, 1943, only a few days later than schedule. First water passed over the dam on December 4.

Before this new permanent dam was completed, the history of the old installations was one of damage and destruction. A simple wood dam at Mill A was built originally in 1887. There was a small break in this dam in 1907. In the higher flood of 1923, only about fifty feet of the dam was washed out, only about one-third the size of the break which occurred on January 2, 1943. The dam proper was, of course, the power company's property and the walk linking Groundwood Mill A with the main part of the Hawley plant and stock, water and steam lines, and a flume carrying wood belonged to the Hawley company. These were all carried away and the usually tranquil log pond, lying between Mill A and the Oregon City shoreline, became a raging torrent.

There were two breaks in the rock-filled wood crib dam. The first came at about 7 a. m., January 2. Across the river at West Linn, it raised the water 23 inches in "nothing flat," the harried rescue workers there said. Another portion went out about 5 p. m. the same day,



JAN. 2-9, 1943. VIEWS OF THE WILLAMETTE RIVER FLOOD AT OREGON CITY, ORE.

Left—The actual giving-way of the old rock-crib dam, looking toward Hawley's Mill A. This is where the new dam stands. Center, top—A view of the break from Mill A, looking toward the main Hawley mill. Taken January 9, this shows the flow far below its crest.

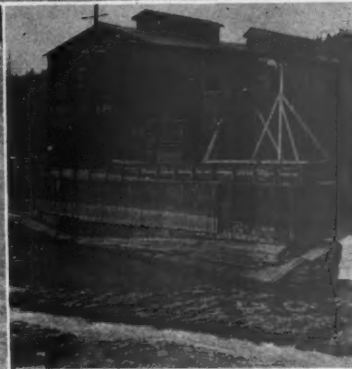
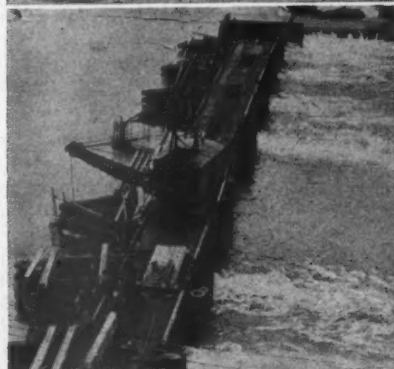
Center, lower view—The flood at crest, showing how it almost obliterated Willamette Falls in the center of the river, between Hawley Mill A, in right foreground, and the Crown Zellerbach mill at West Linn, shown in upper right corner of the picture.

Right—Another view of the break, after waters receded, as it looked from the Oregon City shore, looking across to the Crown Zellerbach properties.



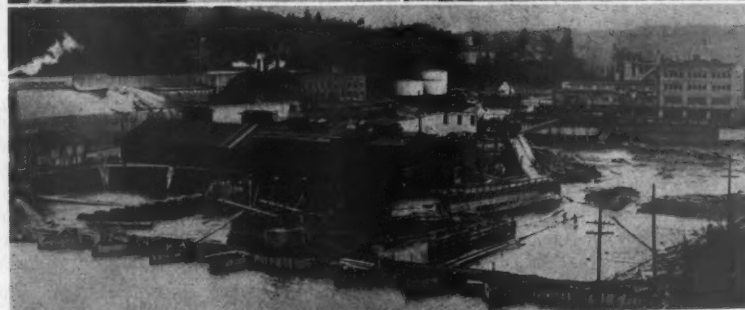
**STEPS IN CONSTRUCTION OF THE NEW CONCRETE DAM AT OREGON CITY, Ore.,** which is aimed to end flood ravages that periodically have stricken the Hawley and Crown Zellerbach mills on the Willamette River.

On March 5, 1943. The initial cofferdam construction extending from the Oregon City bank toward Hawley's Mill A. The engineering problems of this type of emergency stop-gap building, are fully revealed here.

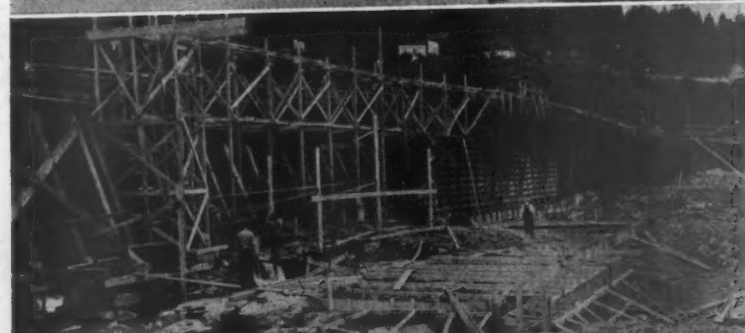


Left—On March 14, 1943. The completed cofferdam, with open gates, before water control was attempted. Three distinct flood stage heights of water were registered after cofferdam construction began, in two of which the bastions were two feet under water, with water passing over the cofferdam roadway.

Right—Mill A as it appeared after the water had been shut away by the cofferdam, enabling work to begin on the permanent concrete dam. A portion of the old rock crib work shows. It is along here that the new dam was to be constructed.



**ON MARCH 25, 1943. THE COMPLETED COFFERDAM** in complete control of the water. This interesting view shows the original McLaughlin tail race in right center, dividing the exposed rock with its channel. The cofferdam is made of timbered sections weighted with rock.



**ON JUNE 30, 1943. PRELIMINARY WORK IN PROCESS ON THE NEW DAM.** Here, as shown, the water has been drained off, with the aid of the cofferdam. Forms are shown being set for the concrete pouring process. Concrete was pumped through long lengths of pipe.



**ON AUGUST 13, 1943. A CLOSE-UP OF CONCRETE BEAUTY.** The engineering grace of this extremely utilitarian dam must please almost any eye. The deep niches reveal how the immense structure has been tied together. In the extreme right background, a part of the main Hawley plant shows.

raising water an additional 16 inches at West Linn.

Although not as high as the disastrous flood of 1923, C. E. Bruner, resident manager at West Linn, said in its nature, last year's flood was more destructive, with larger swells and more surging. In 1923 the water rose to nine feet in the basements. It rose to only five feet last year, probably because the river channel had been dredged deeper.

#### Flood Damage Recalled

● Last year's flood wrecked an old pulp barge, used only for wood storage, and a rented tugboat. Knee deep water shut down 20 grinders in Mill A, but partial operation was continued with electric grinders.

At the West Linn Crown Wilmamette mill, division of Crown Zellerbach Corp., water rose to five feet in the machine room basements and fast work of foremen and crews rescued more than 100 motors. In the same way, many motors were rescued at Hawley, too, where a few got wet. The break in the dam at the Hawley mill across the river pushed the crest of the flood over toward the West Linn plant and gave the employees little time to carry out rescue operations. Wearing high boots, the men waded in and rushed motors to higher levels. As a result of the speedy action, only four or five motors in West Linn's Paper Mill C were wet. Most of the Hawley and West Linn logs were upriver and losses were only about 500,000 feet.

It will be recalled that up at Salem, the Oregon Pulp and Paper Company lost most of 1,100 tons of finished paper stored in the Larmer warehouse. It saved 500 tons in the main mill plant, but they lost a considerable amount of logs.

During the 1943 period of reconstruction, the Hawley Pulp & Paper company took advantage of its Mill A situation to effect extensive repairs and new installations there. The present and original building dates back to 1889, before W. P. Hawley of Oregon City, then resident manager of the Crown Columbia Pulp and Paper company, left that company in 1908 to cross the river to its east side and build the paper mills which now bear his name.

Mill A now has new underpinning, a renewal of siding, stagings, and pipe lines, complete overhaul of the grinders and ventilators, and an additional supply of water for the grinders which is provided by an intake, heavy valve and screening device, all set back of the highest part of the dam which occurs at the "island" where Mill A is situated.

ON SEPTEMBER 9, 1943. RECONSTRUCTION of Mill A of the Hawley Pulp & Paper Company proceeded while the dam was being built. Siding was removed and renewed after new piers were set and new supports were placed.

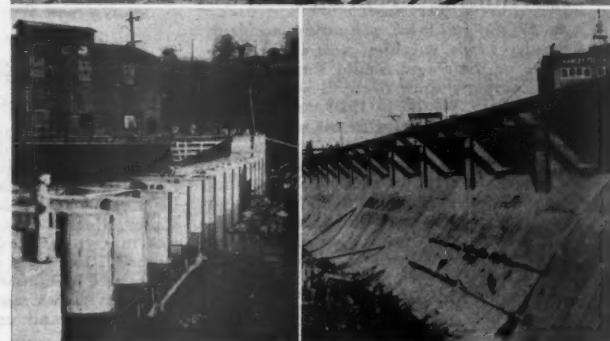
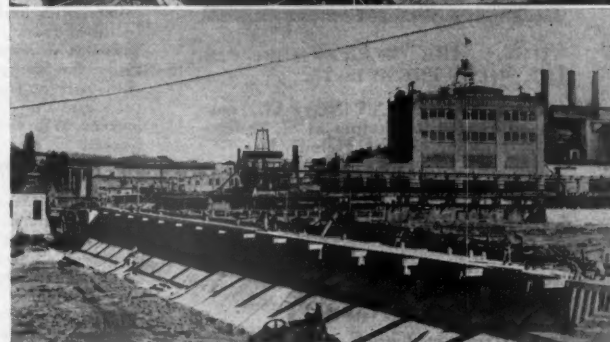
ON OCTOBER 4, 1943. FORMS IN PLACE for pouring the highest portion of the new dam at the corner of Hawley's Mill A.

ON LEFT—October 2. Shows the arch and gravity structure in the course of construction. Concrete was pumped in, sometimes 400 feet, and poured in five-foot lifts. ON RIGHT—November 11. Shows highest portion of the dam, set on a curve around the corner of Hawley's Mill A.

S W E E P I N G VIEW OF THE DAM, photographed on November 6. This shows the arch and gravity construction, with the nearly finished truckway at the top, connecting Hawley's Mill A with the main plant, which appears in right background.

ON LEFT—The huge piers and water slots which will provide water for Mill A, with the grooves for emergency stop logs plainly visible.

ON RIGHT—The full height of the new dam, showing arch and gravity construction, with the finished truckway atop. This photograph was taken NOVEMBER 10.



This installation has placement below the dock just completed by Hawley employees at the A end of a 450-foot bridge to connect the "island" mill with the "mainland" installations. This truckway, for hauling between the two mills, has a 10-foot runway with overhangs to carry pulpwood flumes and pipe lines in addition, for a total width of 20 feet. It is built in 21 sections, each 22 feet in length. E. J. Behrend, contractor of Oregon City, did this work.

#### Mill A Now At Full

Hawley's Mill A has been running again at full capacity since December 4 when water was made available. This mill did not operate

between January 3, the date of the flood and February 16, at which time partial operation was restored, which continued until July 12, when water was completely shut off while the concrete for the dam was poured.

Work on removal of the cofferdam and other temporary cribwork essential to completion of the new all concrete connecting dam of the Portland General Electric Company was nearing completion around January 15, 1944. At that time the Willamette River was expected to be clear of all evidence of last year's flood.

Overall cost of the replacement totals about \$500,000, with \$250,000

set down as the cost of the dam proper; cofferdam, roadway and other facilities charged at \$100,000 and costs of \$150,000 charged to damage and replacement costs, emergency maintenance and other flood damage restorations.

Thus, though Old Man River did well in devastation by silting up both Hawley and Crown Willamette mills and wetting down many electric motors, it is an ill flood which brings no good. Certainly, loss of property and time cannot be classed as good, but the new operational set-up, repairs, permanent construction, and especially the security after this third most ravaging, if not highest flood, fall into a beneficial category.



**WOMEN ARE EVERYWHERE IN THE MILLS THESE DAYS.**

(Above) MARY ANN NEVEAU, employed as a beater helper at St. Helens Pulp & Paper Co., St. Helens, Ore.

(Below) Three members of an all-women's crew of six on the rewind reel at St. Helens. They work under direction of R. H. MARTIN, Backtender.

#### Stanley Lewis Hurt In Hunting Accident

● As the result of a hunting accident, Stanley Lewis, sulphite cook and an employe of the Puget Sound Pulp & Timber Company since the mill was built in Bellingham, Wash., in 1926, recently suffered a serious wound in his right shoulder.

Mr. Lewis was shot as he dragged his shotgun through a fence while hunting ducks north of Bellingham. Although suffering from loss of blood, he was able to drive to the hospital, a distance of ten miles. Mr. Lewis is a former Pacific Coast trustee of the Pulp, Sulphite and Paper Mill Workers' (A. F. of L.) Union.

### Mrs. Berney, on British Columbia Tour, Predicts Many Women Will Stay in Industry

● Mrs. Vera Whitney Berney, women's personnel supervisor of the Crown Zellerbach Corporation, Camas, Wash., spent several days in British Columbia during the first week in December, visiting plants of Pacific Mills, Ltd., Canadian subsidiary of Crown Zellerbach, and addressing the University of British Columbia extension groups in the Hotel Vancouver.

In Vancouver, B. C., Mrs. Berney met Vice-presidents Paul Cooper and J. A. Young of Pacific Mills and some of the employees of the company's converting plant. Then she went up the coast to Ocean Falls, B. C., where she was welcomed by Manager R. H. R. Young and other executives and gave a series of addresses to personnel officers and women employees.

Before returning to Camas she spent a few hours at the new Pacific Veneer plant at Sapperton, near New Westminster, B. C.

Mrs. Berney, who has held her present post for only two and a half years and prior to that time, as a high school teacher, had little direct contact with industry, is today regarded as one of the Northwest's outstanding authorities on the problems of female industrial personnel, and it looks as though these problems will continue for some time because Mrs. Berney told PACIFIC PULP & PAPER INDUSTRY that she is convinced that women will stay in industry in large numbers after the war.

In her university extension lectures, Mrs. Berney emphasized the necessity of correct procedure in the preparation and recruitment of women for industrial employment. Generally speaking, she said, there were five classifications of female labor in war industry: Transients, school girls, service wives, women who had been housewives for some time and women who entered the factories from rural districts.

It was necessary for personnel managers, she said, to be familiar with and study the background of the employee, see that she was advised regarding child care and nursing, union regulations, medical care and insurance, factory rules and the correct working attire, safety code and precautions, location of lockers and workrooms, the specific job of the department in which she worked.

"What is needed in industry is more of the show-how attitude and less of trial and error in the treatment of women employees," said Mrs. Berney, who stressed the value of selecting key individuals with the right temperament to supervise and direct personnel work.

"The real test is the resultant attitude of the employee," she said. "Will the employee show a willingness to help in an emergency? Is she proud of the company for which she works? Does she feel that she really belongs? Has she the feeling that what is good for her and the company is good for the country? If the answer to these questions is 'yes,' then the personnel management job is well done, the training has been specific and to the point—the company's most important message to the worker has really been delivered."

#### Stanley Nightingale Dies of Illness

● Stanley Nightingale, office manager of the accounting department of Crown Zellerbach Corporation at San Francisco headquarters for the past five years, died from pneumonia at his home in Mill Valley, Calif., on December 17. Burial was in Cypress Lawn Cemetery on December 20. He is survived by his wife and three daughters. Mr. Nightingale had been with Crown Zellerbach Corporation seven and one-half years.

#### U. S. Chief Forester's Post-War Predictions

● A post-war prediction for the woods industries by Lyle F. Watts, U. S. Forester:

Wood pulp—increased activity.  
Veneer—increased activity.  
Industries using chemical raw materials—increased activity.  
Lumber—at or near wartime levels.  
Paper-base plastics—will be used in automobiles, furniture, etc.

# Some Questions on Rosin Sizing of Paperboard

By **BRUCE F. BROWN, Jr.\***

Chief Chemist, Vernon (Calif.) Division,  
Fibreboard Products Inc.

## Purpose of Rosin Sizing

**S**IZING is the treatment that the papermaker gives to his paper in rendering it more resistant to the absorption of liquids than it ordinarily would be. A few paper products require absorption of water or other liquids for proper performance, such as blotter, toweling and waterleaf papers, and are not sized; but by far the most uses and the greatest tonnage of papers of all kinds require more than the normal resistance to liquid penetration. These are, therefore, sized. For instance, writing papers are sized to keep fountain pen inks from making a feathery line. Cartons such as ice cream, milk, butter boxes and overseas containers come in contact with water and will become limp and soggy and lose their strength very rapidly if they are not made resistant to penetration of water by sizing. Therefore, these cartons require as much resistance as can be imparted by the sizing process, and they are termed hard-sized boards.

Certain papers for example, those used as the linings on gypsum lath products, require a moderate amount of water resistance so that water from the gypsum slurry can be removed through the paper fairly rapidly, and yet the paper must not get so wet that it will become too weak to properly carry the wet slurry. This illustrates moderate sizing, and you can see that this case might be fairly difficult to control within close limits. Slack sizing, or very light sizing, is applied to a majority of boards that do not meet liquid water in their uses.

Rosin sizing is very efficient, and it takes only a small amount to greatly change the water absorption of paper stock. Thus, you can see that the paper can be considerably changed, at a fairly low cost, with respect to water penetration.

There are two main methods used in sizing papers.

One is an external application of a material which partially clogs the surface pores and which increases the contact angle that a drop of liquid will take when put on the paper's surface. This makes the liquid stand in droplets or run off of the paper. Glues, waxes, starches,



**BRUCE F. BROWN, JR.**, Chief Chemist, Vernon Division, Fibreboard Products Inc., Los Angeles, who discussed questions on paperboard sizing at December 16 meeting of Papermakers and Associates of Southern California.

and proteins account for most of the volume so used. These are often employed to prevent the penetration of liquids other than water on paperboards such as printing ink, greases, oils, and waxes.

The other method, internal sizing, is used more when resistance to liquid water is desired. It is easy to use and affects the sheet throughout, thus, continuing to retard the rate of absorption once the surface resistance is overcome. It is generally cheaper to use when water resistance is desired.

Internal sizing is accomplished by adding the sizing materials directly to the pulp while it is being prepared for making the paper; thus, the sizing materials become an integral part of the finished sheet. Rosin or rosin soaps, waxes, starches and asphalts are the materials most generally used, with variations of rosin and rosin soaps accounting for the greatest volume. In all of their uses the rosins require alum to make the operation efficient.

## What Is Sizing

● Various ideas of sizing have been advanced, ranging from the complete coating of each fibre and the filling up of the pores in the sheet, to the deposition of particles with physical properties that retard the "wicking" of liquid water through

and around the fibres in which they are distributed. The last idea is the basis of various theories which are concerned with what the particles are and how they are put and held in the sheet, all agreeing on the fact that the particles themselves do the work. This is the most widely accepted concept.

**IS IT LOGICAL TO CONCLUDE FROM YOUR EXPERIENCE THAT THE SIZING AGENT IS DISPERSED AS PARTICLES THROUGHOUT THE SHEET?** I think it is the only explanation that fits in with our experience.

Assuming that this is true, let us now go on and try to examine what happened when a liquid (and we will refer to water because that is the most common one that we try to keep out) penetrates a sheet of paperboard. Picture, if you will, a section of paperboard with fibers lying more in one direction than the other, in a series of irregular planes one on top of the other. Or, in other words, a three dimensional mat with more fibres lying flat in the plane of the paper than there are standing on end or at steep angles. Also these fibers are lying in one direction of the plane more than in the other because of the flow of the fibers as the sheet is made.

Now let us immerse a sheet of paper in some liquid water. A myriad of air filled pores plus the surfaces of criss-crossed fibers and a few fiber ends meet the surface of the water. Here, where the surfaces of the fiber and water meet, fields of the molecules of both fiber and water exert definite forces on each other. Think of these as small attracting fields surrounding each molecule and having intensely strong attraction forces over a very limited area of action. This area is probably not over twice the distance between molecules. If the force exerted by the fiber molecules on surface water molecules adjacent to the fiber is greater than the force of the other water molecules on these same surface brothers, capillarity exerts an inward pull. Since the water molecules are mobile, they move inward along the surfaces which they contact, wetting the fibers and filling the small paper pores as they go.

Now suppose a fine column of

\*Presented before the Papermakers & Associates of Southern California meeting in Los Angeles December 16, 1943.

water working its way through an internal passageway meets a particle of sizing material. Conditions here are different. The water still exerts the same average force on its surface molecules, but the size particle has very little pull on them. This is a definite property of the size, as much as it was of the fiber, and it is always the same at identical conditions. Now, the water molecules exert more pull on their surface members than do the size particles, and the water surface becomes convex, capillarity ceases to pull forward, and the advancing water is stopped in it strack so to speak. Of course, there are other fibrils or sub-fibrils contacting the same column of water, so the latter probably eventually works its way around the size particle and goes on continuing to penetrate the sheet. Thus, the net effect of the size particle has been to slow up the rate at which the water was penetrating.

This is essentially the explanation of internal wetting by Cobb and Lowe,\*\* which expresses in mathematical form, based on work with small capillaries fed by a reservoir, the rate of flow a liquid will assume. The forces of the liquid and solid bodies in contact, which are working on the surface molecules of the liquid member, form a definite contact angle, which affects the rate of flow that the liquid will assume. Factors other than the contact angle which also play a part in capillary flow, are: the pore size, the surface tension of a liquid, the viscosity, the temperature. So you can see that the liquid, whose absorption we try to prevent determines the selection of the sizing material as much as does the ease of dispersing and holding the agent in the fiber web.

A series of questions arises from this attempt to trace the penetration of a liquid and the retarding of it by a sizing material. These are the ones which come to my mind.

**WHAT ABOUT THE VAPOR PRESENT AT THE SURFACE OF THE LIQUID AS IT PENETRATES THE SHEET?** We know that a fiber's moisture content changes with humidities and that at high humidities the fibers hold more moisture than at low ones. Is it possible then that this vapor, preceding the liquid, can partially undermine the work of the size ahead of the liquid column by making the fiber more susceptible to wetting? Conversely, we know from operation

that an overdried sheet does not take on as much vapor and that an additional size effect is created by overdrying.

**IS THE VAPOR THEN A FACTOR WHICH LIMITS THE SIZE EFFECT THAT CAN BE IMPARTED TO A SHEET?**

A second question arises. **DO THE FIBERS, FIBRILS, AND SUB-FIBRILS PASS LIQUID INSIDE THEM? IF THEY DO, IS THIS A FACTOR THAT LIMITS THE SIZE EFFECT THAT CAN BE OBTAINED?**

**THE FIBERS SWELL AS THEY BECOME WET. DOES THIS SWELLING TEND TO CHOK OFF THE FLOW OF WATER TO INNER PARTS, DOES IT TEND TO DISRUPT FORMATION AHEAD OF THE SPOT WHERE THE WATER SURFACE IS ADVANCING THUS HELPING THE PENETRATION; OR IS IT MERELY A RESULT OF WETTING AFTER THE WATER HAS GONE BY, WITH NO EFFECT?**

**WOULD THE MOST EFFICIENT SIZING AGENT BE ONE WHICH HAS THE HIGHEST CONTACT ANGLE, AND WOULD A MINIMUM OF THIS MATERIAL DO THE WORK IF PROPERLY DISPERSED AND HELD IN THE FIBERS?**

If an internal sizing agent is present as minute particles, as I have assumed, undoubtedly the dimensions of these particles and the evenness of their distribution will affect the resistance to liquid penetration. **IS THERE A MINIMUM AS WELL AS A MAXIMUM PARTICLE SIZE THAT LIMITS THE RANGE OF ECONOMICAL SIZING?**

Let us proceed now, leaving our theoretical picture of what sizing is, and go on to see how the paper maker puts these particles in the paper and the problems which this entails.

A paper maker uses either an emulsion or a solution of the sizing agent or a combination of the two which he adds to the pulp. The emulsified particles are either filtered out and retained by the fibrils mechanically, or are attracted by electrical phenomenon, or both. The dissolved sizing material must first be precipitated from solution before it can be properly held by the fibers. Aluminum ions are always used when rosin or rosin soaps are the sizing agent, for they have proven to be the one cheap available sub-

stance which sets the sizing material in the fiber mass to make the operation efficient. This "setting" phenomenon is the subject of the most heated debates on rosin sizing.

It is an accepted fact that both the fibers and the rosin have similar electrical charges and naturally tend to repeal each other. Aluminum ion meets all the required conditions of a substance with an opposite charge which is capable of bringing the fiber and rosin together. Some divalent, trivalent and quadrivalent ions will affect this bonding but not as economically as will the aluminum ion.

Some believe that complex aluminum resins are formed with saponified rosin and aluminum ions and that these are the very efficient water repellent materials, while others believe that free rosin is as effective and is not susceptible to side reactions that might occur such as the action of water hardness on saponified size.

These are all very complicated relations, and the evidence derived from a wide variety of conditions, often seems to be contradictory, but certain facts appear universally.

First: More alum is always required to get good sizing than is necessary to react with dissolved rosin soaps plus the tendency for aluminum ions to attach themselves to the fibers and size particles.

Second: Free rosin size emulsions require alum to make them effective, although no alum is necessary for precipitation.

Third: A pH range from 4 to 7 is necessary in order to get proper size effect.

Fourth: A limit (of around 3% to 5% of rosin size added) is reached where size effect ceases to develop.

Fifth: Electron microscope pictures of size particles enmeshed in fibrils and sub-fibrils of paper stock show the particles to be of huge size compared to the fibers on which they rest.

The first four of these facts seem to depend on the idea of an electrical bond between the fiber and size particle with the aluminum ion as the go between holding the two together. Williams and Duston\*\*\*, in a recent article explain the necessity of an excess of alum for both free rosin and saponified sizes, by stating that fibers and rosin particles are ion-exchangers. A relatively low concentration of aluminum ions is

\*\*"A Sizing Test & A Sizing Theory," by R. M. Cobb & Donald M. Lowe—Technical Association Papers Series XVII No. 1, 1934—pp. 213.

\*\*\*"Effect of Pulp Board Density on Engine Sizing," by Wm. S. Wilson & Harold E. Duston—Paper Trade Journal Nov. 18, 1943—pp. 29.

required to saturate the rosin, but fibers do not tend to exchange these ions so readily, and a higher concentration, or an excess of alum is necessary to bring this about.

The 3% limit may be explained by the electrical bond idea because the fibers would naturally have only a certain quantity of charges, and after these are used, no more size particles can be held in this manner. If further retention is obtained, it is mechanical, and it must be ineffective. On the other hand, electron microscope pictures make it difficult to imagine that charges on fibrils so small are capable of exerting a tight bond on size particles which are proportionately so much larger.

These are the questions that occur as I review the facts just mentioned.

IS IT NECESSARY TO HOLD THE SIZE PARTICLES IN PLACE WITH A BOND IN ORDER TO GET A SIZE EFFECT? IN OTHER WORDS, CAN THE LIQUID PUSH THE PARTICLES ON THROUGH THE PORES OR GO AROUND THE PARTICLES WITHOUT MUCH RESISTANCE IF THEY ARE NOT BONDED TO THE FIBERS?

SINCE SIZE EFFECT FALLS OFF AT 3%, WHY IS IT THAT ADDITIONAL SIZE PARTICLES THAT MIGHT BE RETAINED ARE INEFFECTIVE?

As fibers are beaten, fibrils and sub-fibrils unspiral from the way they were "twisted" together as they were grown. This twisting action is thought to be a result of self-equalizing of charges on the fiber molecules as they are built up by growth. This question arises: IN REFINING FIBERS FOR MAKING PAPER, ARE WE SETTING FREE SOME ELECTRICAL CHARGES WHICH WILL AFFECT THE SIZING PROCESS?

So far we have looked at the possible mechanism of sizing and the methods used to put rosin sizes in the sheet for internal sizing. Now let us continue by examining factors in the process of making the pulps containing size and alum into a sheet of paper.

In our mill, whenever we refer to the liquid water resistance which we impart to our boards, we talk about "size effect" and not sizing. We do this because it acts as a constant reminder to us that there are numerous factors other than the quantities of size and alum, and the pH at which we are running, that may



D. A. EVANS (right), RESIDENT MANAGER OF THE POWELL RIVER COMPANY, is shown presenting first and second prizes in the big paper mill's recent Victory Bond campaign to HARRY DUNN (left), of the Steam Plant, and BOB SOUTHCOTT, of the Townsite Department, for their selling achievements. Mr. EVANS was chairman of the campaign for the entire community of Powell River, B. C.

Signs in the background of this picture say: "Save to Beat the Devil" and "I've got a Date With A (Blond crossed out) Bond." The company's 1,400 employees pledged 14 per cent of their pay for six months to purchase of bonds.

cause the water resistance to vary. We use two tests on board as it comes from the paper machine to control the size effect which we are putting in the sheet.

The two tests we employ are based upon conditions which the board will meet in its uses. One is a dip test, in which the rate of water absorption is checked. This exposes end and side edges as well as the flat surfaces to the water. It is used where the board is liable to be wet in any manner. The other is a surface penetration test, which prevents all edges from contacting the water as is sometimes the case in operation. (It should be mentioned here that the edges of the board present more fiber ends than do the paper surfaces; therefore, there are many more through tubes which cause capillarity than there are from the flat surface and penetration from the edges is much more rapid.)

Probably the most unpredictable of these factors, and the one that can be caused by numerous unseen conditions, is the formation of the paper on the cylinder molds. This affects sizing considerably. We sometimes see examples of this when our formation, for some reason or another becomes "wild." We can usually predict a drop in our size effect when this happens. We can try to correct by changing the pH or the amounts of sizing materials added, but this must be done carefully and in cooperation with the

machine tender, who is at this point trying to improve the formation. Any changes that are made in the sizing of the paper stock may affect the adjustments that the machine tender is making. Thus, formation affects water resistance or size effect.

The sizing operation itself can affect formation, and this is no small effect, either. Many times on grades varying from 100% waste to 100% bleached pulp boards, we have actually improved our size effect by decreasing the quantities of size and alum added. This change is almost always accompanied by visible improvement in formation.

Too much sizing material sometimes causes slipping on the cylinder mold.

The 3% limit which we were theorizing over, earlier, is very seldom reached in our process, because the machine operation becomes too difficult with this amount of sizing material present. In our case, 2½% of a saponified size and the required 5½% alum, are about as much as we can use and be comparatively free from operational troubles.

Hard sizing causes foaming which we combat with anti-foam compound. It also affects the wet felts with consequent machine troubles.

It is probably true that alum is the worst offender as a disrupter of formation, and we use relatively large quantities of it in rosin sizing.

The type of stock being used is another factor which has a large

bearing on the water resistance that can be imparted. We find that as chemical cooking and bleaching is increased in making a whiter and a higher grade of pulp, ease of sizing and the size effect that can be obtained decrease. We are aware of two other characteristics of pulps which follow this same pattern. The amount of moisture that these pulps will hold in equilibrium under any given atmosphere will decrease from groundwood through kraft, unbleached sulphite, bleached sulphite and de-inked stock, or in other words, as the chemical cooking increases. Likewise the shrink that these sheets will take if beaten to equal freeness increases along this same array.

This question then arises, IS THERE A RELATIONSHIP BETWEEN THESE FACTS WITH ONE BASIC CAUSE OR DO THEY FALL IN THIS PATTERN BY CHANCE? CAN SIZING BE AIDED IN THE CASE OF BLEACHED PULPS BY ADDING BACK LIGNINS OR SIMILAR COMPOUNDS WHICH HAVE BEEN REMOVED BY CHEMICAL COOKING?

Another factor that affects sizing is hardness in the water. Experiments which we have run showed us that distilled water allows more size effect to be developed and with less materials than in our mill water, which carries 14 grains of calcium bicarbonate hardness. Mills in soft water areas invariably have less sizing difficulties than do those using hard waters. A test on the precipitate which is formed with our hard water and saponified size revealed the fact that this material is itself an excellent sizing agent.

The question is: WHAT IS THE DETRIMENTAL EFFECT OF HARD WATER ON THE SIZING OPERATION? DO SOME OF THE IONS PRESENT IN HARD WATER HAVE MORE AFFINITY FOR ROSIN AND OR FIBER THAN THE ALUM USED? IS THE REACTION OF ALUM ON HARD WATERS—A DIRECT CAUSE OF DECREASED SIZE EFFECT? IS THE PRECIPITATION OF INSOLUBLE ROSIN SOAPS BY HARD WATER A CAUSE?

One of the tricks of the color experts is to add tannin to a bleached pulp before dyeing it with certain colors to make the dye set on the fiber.

ARE THERE CHEAP MATERIALS AVAILABLE THAT CAN AID SIZING ECONOMICALLY?

Next we come to the factor of heat and the functions it plays in the sizing process. In using rosin sizes, these peculiar circumstances present themselves. The size effect will begin to be destroyed if the temperature of the wet stock, before forming a sheet, exceeds 130 degrees Fahrenheit, but after the sheet has been formed, and is being dried, heat of 180 degrees or above is required to develop the size effect.

The following experience illustrate these facts. In our plant we use water ranging from 120 to 125 degrees on some stocks that are difficult to defiber, and we have to make certain that this upper limit is not overreached, because we begin to lose our size effect rapidly as the temperature of the wet stock goes up. In our binders' board plant, on the other hand, we make heavy lap materials that must be kiln dried. The kiln temperature is only 120 degrees. Less than one half of the potential size effect is obtained under these conditions. The Minton vacuum drier is used for pulp machines because a good size effect cannot be obtained at the comparatively low temperatures at which these driers operate.

I would like to know the answers to this group of questions about the functions of heat on sizing.

WHY IS A HIGH TEMPERATURE BEFORE FORMING THE SHEET DETRIMENTAL TO SIZE EFFECT? DOES IT REDUCE THE AFFINITY OF FIBER OR SIZE PARTICLES FOR ALUM AND THUS RUIN RETENTION? DOES AN AGGLOMERATION OF SIZE PARTICLES TAKE PLACE AT HIGH TEMPERATURES IN THE BEATER, INCREASING THE PARTICLE SIZE SO THAT IMPROPER DISTRIBUTION RESULTS? IS THE CHANGE DUE TO THE INCREASED DISSOCIATION OF ALUMINUM HYDRATE?

HOW DOES HEAT ON THE DRIERS DEVELOP SIZE EFFECT? DOES IT CHANGE THE SURFACE CONSTITUENTS OR THE SHAPE OF THE SIZE PARTICLES? WHERE IN THE DRYING SECTION IS A GOOD SIZE EFFECT COMPLETELY DEVELOPED? DOES THE WATER IN THE SHEET HAVE ANYTHING TO DO WITH THIS?

The last phenomenon that I would like to mention is that of ageing on size effect. We have found on samples, with an incompletely

developed size effect that resistance to penetration through the surface would increase as much as 1000% over a year's time on manila lined news board, and, that a sheet of this nature will end up extremely hard sized. Other samples of the same board containing insufficient sizing material would increase some, but not so markedly on ageing. We generally find it true that size effect increases with ageing on groundwood stocks at least. We have never checked any that did not contain groundwood. Even lightly sized and unsized groundwood sheets develop a spotty size effect equivalent to hard sizing after it had been aged or weathered. Every board manufacturer is familiar with the "fish-eyes" that occur in news or ground wood stocks, and which are sometimes present in kraft or unbleached pulps. Light is thought to be a dominant factor in this change, but pulps in the middle of a stack in a warehouse develop this tendency to some degree.

WHAT HAPPENS TO SIZE EFFECT ON AGEING? IS THIS SIMILAR TO THE ACTION OF HEAT ON THE DRIERS? WILL WATERLEAF PAPERS DEVELOP A SIZE EFFECT UPON AGEING IF THEY CONTAIN LIGNINS OR UNDEVELOPED SIZING AGENTS?

If the answers to these seemingly academic questions were definitely known, the practical value would be in allowing us to determine the variables which now cause the ever-present fluctuations in size effect and aid us in controlling conditions to minimize them. Possibly new sizing materials or techniques to give harder and more uniform size effect could be developed.

## Pipefitters Lead Longfibre Bowlers

● Final standings in the Longfibre Bowling League of the Longview Fibre Company of Longview, Wash., have been announced for the first half of the season as follows:

	Won	Lost	Pctge.
Pipefitters	39	17	.696
Mechanics	32	24	.571
Supervisors	30	26	.535
Box Plant	29	27	.518
Machine Room	28	28	.500
Bag Plant	25	31	.446
Pulp Mill	22	34	.393
Finishing Room	19	37	.339

High team game, Bag Plant, 1058; high team series, Machine Room, 3011; high single game, White of Pipefitters, 266; high single series, McDaniels of Mechanics, 721; high individual averages, T. Kerns, Machine Room, 192, and Renzloff, Mechanics, 191.

# Pacific Paperboard Completes Financing Program for Expansion

• E. H. Flood, who moved from Spokane to Longview, Wash., in 1941 to become president of Pacific Paperboard Company, recently issued a formal statement announcing completion of a financing program with the aid of government agencies to complete installations of new machines at the company plant and to liquidate indebtedness.

Mr. Flood said that nearly two years ago the company purchased two complete paperboard machines in Maine and had them shipped to Longview, but on account of inability to complete financial arrangements, installations were delayed. These two machines and the original machine, installed in 1926, as well as other new equipment, is described in this article.

Several months ago an application was made to the Smaller War Plants Corporation for sufficient funds to cover the company's indebtedness and install the machines. With the aid of Senator Mon C. Wallgren, this application was accepted and the loan authorized. The filing of the \$348,000 mortgage with the county auditor here last week completed the transaction.

## To Clean Up Debts

Mr. Flood, in his statement, said the proceeds will be used to liquidate the company's indebtedness and complete the immediate installation of the idle paperboard machines, increasing the capacity of the plant from 65 to 125 tons daily.

With the help of the Reconstruction Finance Corporation, which will still retain a mortgage of \$45,000 and also service the Smaller War Plants loan, and several of the larger creditors who have given standby agreements of about \$125,000 subject to the mortgage indebtedness, all of the other creditors, both secured and open, are being paid off in full, leaving a sufficient working capital to carry on the business on a cash basis, the statement said.

Mr. Flood said the company employs 200 persons residing in the Longview-Kelso area and manufactures all types of boxboard including stock of paper matches and container boards, operating its own conversion plant where laundry, suit, clothing, cake and other types of boxes, both automatic and folding are manufactured, along with egg boxes and fillers for egg packers.

## Waste Paper Chiefly Used

"The market for the products is distributed throughout the western states and the raw product used in the manufacture of these various items is 90 per cent waste paper, magazines, old newspapers and corrugated boxes," he said. "The other 10 per cent is from the company's own groundwood mill and sulphite pulp from the local Weyerhaeuser Timber Company plant.

"The waste paper comes from Portland, Spokane, Seattle and other points, as well as that gathered by local collectors and shipped in carload lots to the plant."

Mr. Flood, in the company statement, expressed his thanks to the loyal employees of the company, as well as local people and business interests who have



View of Office Building, Pacific Paperboard Company, Longview, Wash., which was occupied by officers and staff about a year ago.

cooperated with the concern and its employees during the months when the financing of the plant was difficult. He also expressed his appreciation for the work of Senator Wallgren in assisting with the arranging of the loan.

The company is capitalized for \$600,000, with some 800 stockholders, most of whom live in the vicinity of Longview and Portland, while the plant value is estimated in excess of \$1,000,000.

## Officers of Company

Officers of the company are Flood, president; Lloyd E. Utter, vice president; Thomas J. Kennedy, secretary and sales manager; Fern D. Geiger, assistant secretary; E. W. Trueman, assistant secretary; Flood, Lieut. E. E. Flood, Jr., with the armed services, and Kennedy, directors.

Among those active in the plant operation, Flood said, are: Kenneth W. Gordon, production manager; Arnold Maahs, tour boss; Henry C. Armstrong, purchasing agent; Ralph Mason, chief engineer; William Ball, master mechanic; James Orgeneal, chief electrician; Arthur Arvidson, assistant master mechanic; H. F. Arveson, building superintendent; Albin Sonderen, superintendent of conversion plant; Viktor Wolter, yard superintendent; Clyde Paxton, shipping department; H. H. James, personnel officer; Arthur J. Lamb, auditor; Charles Langer, log and wood buyer.

The area covered by the buildings of the company, on ground along the Cowlitz river and near the high wooden bridge that links Longview with the Pacific Highway to the south of Kelso, has more than doubled. Much storage space has been added and a modern white office building has been erected. This

new building was occupied by Mr. Flood and his executive staff and office crew in the last weeks of 1942.

The new office stands removed from the mill, across a private roadway. On area occupied by the old office, a storage room, 150 by 140 feet by 20 feet high, has been completed this spring. This is for finished products. In the spring of 1942, a storage room, 210 by 60 feet and 35 feet high, was built along the Cowlitz River dike. This is for storing raw materials, which consist mainly of scrap paper brought in bales to the plant.

The first paperboard machine was installed at the Longview plant when it opened in 1926. It was made by Shurtle Brothers Machine Co., of Middletown, O., now a division of Black-Clawson Company. It is a five cylinder 84 inch trim machine. Its overall grade range is caliper .014 to .054. The range is mostly in carton stock. It makes plain chip, all grades of patent coated board, single manila, test liner and filler board. Production officials of the company said that this machine has been improved and stepped up from 30 tons to 45 tons daily production. This, they said, has been done with the addition of twelve dryers and an electric driven constant speed wet end.

The second machine, which arrived at the plant on December 2, just five days before Pearl Harbor, is a combination of paper and board machine. It was installed in the plant's old storage room. It was obtained through brokerage firm in New York from the Red Rock mill at Montville, Conn. The previous owner had just rebuilt the machine but went out of business when fire burned out his beater room.

This No. 2 machine has five cylinders

and is 60-inch trim. Its range is caliper .020 to .050. It makes mostly plain chip and filler board but has run some single manila and special cake box board. The company officials said it has produced as much as 27 tons a day but averages around 18 tons.

The third paperboard machine is a Beloit, bought from United Paperboard Company of Benton Falls, Me. It is a six cylinder machine with 82 inch trim. It was delivered in late 1942. The vats were set up a year ago. It is estimated that this machine will run at least 25 tons a day. Pending completion of installation, the company officials had not decided what kinds of board they would run on it.

A 50-ton hydropulper, bought from the Dilts Machine Works, division of Black-Clawson Company, arrived in February, 1942. It takes the place of three, and sometimes four, beaters, depending on the grade of paper being manufactured. There is an impeller in the bottom with knives. Included in the hydropulper is an automatic junk remover that takes out all clips, bits of metal and rubber bands. Then the pulp is pumped through a Classifier, which acts similarly to a jordan, and goes over a thickener. Then it goes through a jordan before entering the paper machine chest.

A two-color press from the Miehle PP and Mfg. Co., of Chicago and New York, was purchased last year for the converting plant and was installed last summer.

The newest machine in the plant is a Staude Master, product of E. G. Staude Manufacturing Company of St. Paul, Minn. This was installed this past winter. It was the company's newest model and they had manufactured only a limited number prior to the wartime freeze order which forced discontinuance.

It is a versatile machine, capable of

making many types of boxes. It will out-and in-fold, crease and spot-glue boxes. It makes so-called automatic boxes without any stitching wires, gluing the box parts. It will make from the smallest size of box to a full size clothes box.

### Box Company Opens Plant

Andre Paper Box Company has opened a new plant at 543 Mission Street, San Francisco, where capacity production has already been reached. All five floors of the building are occupied.

### Captain Crout Overseas

Capt. Glenn E. Crout, former shipping foreman for the Puget Sound Pulp and Timber Company, paid a visit to his old friends in Bellingham in early December. He had been stationed in Olympia in the traffic department of the United States Army. His visit in Bellingham turned out to be a farewell, as he reported his safe arrival somewhere overseas on December 20.

### Sgt. Ochs of Camas

#### Is German Prisoner

● Sergeant Leon Ochs, U. S. Army, reported missing in a Flying Fortress raid over Germany in July, is a prisoner of war. While this news is joyfully received by former fellow employees in the Crown-Zellerbach mill at Camas, it has created a slight complication in the accounting department.

Shortly after war was declared Crown-Zellerbach Corporation announced it would pay premiums on life insurance policies of service men on leave from its various mills up to a \$5,000 policy limit. Since Sergeant Ochs, a prisoner of war, is beyond reach, the reimbursement is being sent to his wife.

### Guy C. Howard, Former Coast Mills' Aid, Dies

● Guy Clemens Howard, who had been associated with the Marathon Paper Mills Co., Rothschild, Wis., on special development work since 1927, died on December 19th.

Prior to his affiliation with Marathon, he had been engaged as a consulting chemical engineer by Washington State pulp and paper mills and metallurgical enterprises in the West Coast area.

At Marathon, he was placed in charge of research and development in connection with the utilization of waste sulphite liquor which has resulted in the commercial utilization of various chemical products.

He was well known in the pulp and paper as well as the metallurgical industry and was an active member of the American Chemical Society, The American Institute of Chemical Engineers and TAPPI.

He was a graduate of the University of Nebraska and took post graduate work at Columbia University.

### Ocean Falls Employees Grow Four Tons of Spuds

● Potatoes as well as pulp and paper are now listed among the products of Ocean Falls, B. C., where Pacific Mills, Ltd., operates its big plant.

Long hailed as "The Garden of the North," Ocean Falls has been noted for its flowers before, but vegetables have been virtually unknown there so far as local production is concerned, and the past season was the first to see a substantial crop planted—and harvested.

Interest in victory gardens led to this innovation at the northern pulp and paper community. Some difficulty was experienced in getting a plow and disc due to priorities, but friends in Bella Coola loaned a plow and eventually a disc was obtained from Vancouver.

A picturesque location in Martin Valley, about a mile from Ocean Falls, was selected as the site of the garden. A two-acre plot was divided in to sixty plots measuring 20 by 30 feet, 55 of which were assigned to enthusiastic war gardeners. All the ground was sown in potatoes as it was the first time that cultivation had been attempted. About 8,000 pounds of high quality potatoes were produced. A cash award for first prize was won by N. Thompson for a record yield of 550 spuds, and W. Check won first prize for best quality.

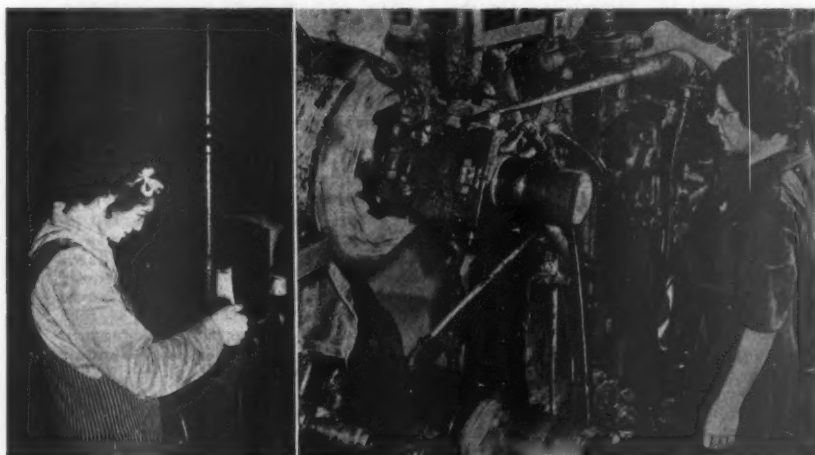
A soil survey will be made before next spring so that the 1944 gardeners may have expert advice regarding fertilizer requirements.

### Women In Everett Jobs

Up to recent date, there were 35 women employed in the Everett, Wash., mill, Pulp Division, Weyerhaeuser Timber Company, doing such difficult work as fuel tender, fuel tender's helper, baler, trucker, etc. Six were in the laboratory, one serving as a shift chemist. The first woman employed in the mill went to work in the lab last March and others all were employed in the last six months.

### Brandt Fully Recovered

Oscar Brandt, pipefitter foreman for the Puget Sound Pulp & Timber Company, is now back on the job, fully recovered from a major operation which kept him away from his work for the past three months.



**WOMEN HAVE TAKEN OVER MANY JOBS FORMERLY HELD BY MEN — BUT ONE OF THE MOST UNUSUAL JOBS for a woman to take over in this industry is that of oiler on a paper machine.**

**THE CROWN ZELLERBACH MILL** at West Linn, Ore., has employed not just one, but two women oilers on its big No. 5 and No. 6 machines. They are:

(Left) **MRS. CAROLINE DEMAN**, Oiler on day shift since October 1. Formerly shipwright's helper in Kaiser's Vancouver, Wash., shipyard, she is wife of **JERRIT DEMAN**, who operates an electric mule on the dock at the West Linn mill. Their 16-year-old son is cook's second helper in the sulphite mill.

(Right) **MRS. LYDIA ROWLETTE**, an Oiler since August, works on the night shift. She's a grandmother. Started in the West Linn mill several months ago putting wood on sawmill conveyor and later making paper cores. Husband, **BERT ROWLETTE**, is acid maker in the sulphite mill.

About 150 women, 20 per cent of the personnel, are now employed at West Linn, according to **J. A. REAM**, Personnel and Safety Supervisor.

## Canadian Control Order Hits British Columbia Log Production

Taxation relief discontinued because officials say the situation has improved / / / But with inducements for loggers eliminated, only 1944 "token shipments" are expected for Puget Sound pulp and paper mills.

WHEN the Canadian Timber Control announced recently that the lumber situation in Canada had improved to such an extent that the special depletion allowance on timber taxation would be withdrawn in 1944 it was assumed in some quarters that there might be more logs available for export to the United States; but the actual result may be just the reverse.

Under the special concessions granted the timber industry in British Columbia in 1943, operators were permitted to deduct a certain amount from their gross profit before calculating their income tax. These deductions amounted to \$1 per thousand feet, plus \$1 on the excess over 60 per cent of 1941 production. On an average this worked out at about \$1.40 per thousand, and it represented a considerable relief from taxation—sufficient to give the operator a real incentive to produce.

With this depletion allowance removed, the logger now lacks special inducement to hasten his production inasmuch as he is unable to replace his stumpage at anything like the price he has been getting for his logs. Unless there are unforeseen developments in the early future, operators say that log production in British Columbia will probably taper off considerably in 1944 and inasmuch as there is an actual demand for all the lumber, pulp and other forest products that can be manufactured, regardless of what the Timber Control says about the supply crisis being over, it is hardly likely that there will be a sizeable surplus for export.

At this time the Timber Control is unable to hazard even a guess as to the amount of logs likely to be available for export to the United States. It seems unlikely that during the early part of the year anyway there will be more than the "token shipments" such as were authorized last year, totalling some 30,000,000 feet of hemlock during 1943.

The fact that the United States prices for nearly all the major commercial species of timber cut in British Columbia are \$3 to \$5 per thousand more than in Canada makes the profit on export logs all

the higher, and with the depletion allowance removed most of the theoretical gain from export business goes into Canadian income taxes.

### Timber Control Announcement

● The Timber Control announcement, made in December by Assistant Controller D. D. Rosenberry in Vancouver, was as follows:

"This is to advise that the arrangement whereby a special depletion was allowed on stumpage logged during the calendar year 1943 will terminate as of December 31, 1943.

"This arrangement was made for the year 1943 only, to encourage all possible increase in production in the coastal area for the purpose of fulfilling orders for critical defense requirements.

"This situation has been remedied to a considerable degree, and the critical period is presumed to be over. Under the circumstances, it is considered that the special depletion allowance on timber is no longer justified."

The announcement was somewhat surprising to operators who had been told only a few weeks previously by

representatives of the British ministry of supply and others that there was still a serious over-all shortage of lumber and that all possible steps should be taken to maintain a continuing supply.

As an additional incentive to log production, the Timber Control increased all log prices in British Columbia \$1 per thousand last June 15 and arrangements were made whereby mills could sell at higher prices to compensate for higher log prices. This schedule of increases, which affected British Columbia pulp and paper mills only indirectly, remains in effect, but since the price was advanced the costs of production have gone up more than \$2 per thousand, according to operators.

"Human nature being what it is, many timbermen will feel impelled to hold back the cutting of more timber than the incidence of taxation makes economic," remarked one prominent logger to PACIFIC PULP & PAPER INDUSTRY. "Some marginal producers may be forced out of business entirely, for the depletion allowance was partly contrived to ease the pressure on them and keep them in production in 1943. Without the depletion allowance they would have suspended operations months ago."

### Production Drop Expected

● The Canadian Timber Control may have difficulty in convincing United States supply officials that if, as the recent decision implies, the supply situation is easier in Canada, logs should not be made available for export to Puget Sound, where there is admittedly a critical shortage of logs. It is known that new Forest Products Bureau of the War Production Board in Washington, D. C., is continuing efforts to obtain further releases.

On the other hand, so far as pulp logs are concerned, British Columbia pulp and paper mills will be able to provide a strong case in their own behalf, based on the fact that in some cases they have been on virtually a hand-to-mouth basis for months and that shutdowns have been only narrowly averted. Indeed, more than one British Columbia pulp mill was compelled to suspend



LIEUT. BERNARD GREEF, USN, took leave of his position as Insulation and Acoustical Engineer for the Pioneer Division, The Flintkoff Company, Los Angeles, before the United States entered the war. He was assigned to active sea duty off North Africa early this year, after one year and a half at the Amphibious Training Base in Maryland, where he was Engineering Officer in Charge of Boat Maintenance.

operations during 1943 more than once, and one company which has been producing a high percentage of vitally needed cellulose material for war has been running very much below capacity for one reason—lack of logs.

It is probable that production of

all classes of logs in British Columbia in 1943 will be about 12 per cent less than in 1942, operators said, despite the fact that during the early months of the year production was down about 25 per cent. The industry experienced a particularly difficult winter in 1942-43 and

most of the logging camps were down, due to freeze-up, heavy snow and bad towing weather, for a far longer period than usual. However, the summer and fall were ideal for logging and operations were maintained with virtually no interruption.

## Canadian Producers May Seek Another Newsprint Price Boost

● Canadian newsprint producers may seek a higher price for their newsprint this year to compensate them for increased costs of production.

It is now pretty certain that costs of manufacturing will be considerably higher in 1944 than they were in 1943. Wage payments are higher as a result of recent adjustments and these are an important item. Pulpwood costs have been rising. At the same time there is considerable doubt as to the total paper production that can be expected, and any decline in output would automatically reduce unit profits.

For the year 1943, most companies are likely to show profits not far from the 1942 level. In the case of some companies there may even be a small increase in profit as a result of diversion from newsprint production at some mills.

During 1943, the price advances granted, amounting to \$8 a ton, went a considerable way towards offsetting higher pulpwood and wage costs. New living cost bonus adjustments, however, make certain high wage rate payments for 1944, and the pulpwood cut in eastern provinces during the present winter will cost considerably more than in previous years.

In British Columbia removal of the depletion allowance granted in 1943 to loggers is expected to lead to higher costs of production and may also be a factor in reducing the available supply of pulp logs.

Production in the woods in the eastern provinces showed some improvement in November, 1943, partly due to the increased number of men made available to the woods camps. Woodcutters for pulp mills were given B category rating in selective service and this factor, coupled with the efforts put forth by individual mills, resulted in the recruitment of a considerable number of men from other industries of less importance in the national wartime program.

If the movement of farmers and

### PRESS POINT OF VIEW?

In a widely published interpretive newspaper article sent out from New York by a national wire service, the writer argued that inasmuch as the Army and Navy demand was for chemical pulp, there need be no restriction on mechanical pulp from Canada. He pointed out, of course, that newsprint is made from mechanical pulp and that much of the Canadian industry is not equipped to make chemical pulp.

He ignored the fact that the critical shortage is in wood, from which both kinds of pulp are made and that Canada and the United States are pledged to share their national resources in the present emergency. Hundreds of newspapers published this article prominently, but it must be that most publishers themselves have a better understanding of the true situation.

other temporary workers into the woods continues as recently, there is a chance that the cut during the present winter may be sufficient to maintain newsprint production at levels comparable with 1943. Much will depend on snow conditions, so far as the east is concerned. Snow is an advantage in the east because it eases transport. On the west coast, of course, too much snow can result in suspension of logging operations altogether, as it did last winter, with resultant decline in log production.

In any event, the industry feels that it is entitled to higher prices, although it will be necessary to obtain the sanction of authorities both in Canada and the United States for any such concession. Advertising volume in the United States has been increasing rather than declining, and this is being used as an additional argument for higher newsprint prices.

### Canadian Board Revises Newsprint Quotas

● Canada's Wartime Prices and Trade Board announced on December 20 new production and supply quotas for Canadian newsprint, indicating a reduction in the quantities available for the United States and Canada and an increase for overseas.

For the first six months of 1944 production will be at the rate of 252,900 tons

—200,000 tons for the United States, 15,400 tons for Canada and 37,500 for overseas markets.

In the past, under the wartime quota set several months ago, the Canadian mills were undertaking to supply 210,000 tons monthly to United States publishers and 16,000 tons to Canada, so that the new allotment represents a cut of about 10,000 tons a month to the United States and a reduction of 600 tons to Canada.

Shipments of woodpulp to the United States from Canada during the first six months of 1944 will be 1,100,000 tons, or 91,666 tons a month. This applies, of course, to woodpulp shipped from the eastern provinces and has no bearing on the situation in British Columbia, where different conditions prevail. On the west coast pulpwood exports depend largely on the supply of saw logs, and the quota will probably be arranged by the Timber Controller on a basis similar to that prevailing in 1943.

While the board's statement said that production rates have been established for only the first six months of 1944, it added:

"Every effort will be made to continue these levels, but the whole situation will have to be reviewed in the light of actual pulpwood production figures for the current season when these figures become available about the end of April next."

Pulpwood production in the eastern provinces is carried out almost exclusively during the winter months, the trees being cut while snow is on the ground and the logs being driven out on the rivers to the mills.

"Shortage of pulpwood, was indicated some months ago by a shortage of labor in the woods," said R. M. Fowler, general counsel and secretary of the Wartime Prices and Trade Board at Ottawa.

"In the interests of Canadian domestic supply and at the urgent and repeated requests of the War Production Board in Washington the Canadian government took a number of steps to improve the labor supply in the woods."

Results of the first four months of the current cutting season in eastern Canada indicated a decrease in Canadian pulpwood output of 25 per cent below the corresponding period in 1942. At the rate of cutting in the immediate past, according to one authority in the industry in Montreal, there would be only 5,850,000 cords of pulpwood available for conversion by the Canadian pulp and paper industry in 1944.

Allowing for the shorter working period, operations of the Canadian newsprint industry in November were on practically the same level as in October and for the second time in 1943 ahead of the like month the previous year in respect to both output and shipments.

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**HAWLEY PULP & PAPER COMPANY MOVED INTO NO. 1 SPOT AMONG THE 29 PACIFIC COAST PULP & PAPER MILLS COMPETING ON THE MACHINE SHOP WAR WORK PROGRAM, ACCORDING TO THE DECEMBER 1 LISTINGS.** Number of prime tools available and total hours allotted to the work are averaged in determining the relative standings of the mills in the monthly reports. The Hawley mill at Oregon City, with 8 prime tools and a total of 4676 hours moved ahead of the smaller Lebanon, Ore., mill of Crown Zellerbach Corp., which ranked second with three prime tools and 1903 hours. The West Linn, Ore., mill of Crown Zellerbach Corp., was third.

The above photo shows **CARL E. BRAUN**, Vice President and Mill Manager, Hawley Pulp & Paper Company, congratulating **JAMES HOLLENDER**, Master Mechanic, and all of the Machine Shop Crew on having attained top place. The girls are lathe operators.

(Reading from left to right): **JAMES A. WILSON**, Assistant Mill Manager; **HARRY FROMONG**, **EARL LEWIS**, **LEO BITTNER**, **HAROLD DUEY**, **ROY SIDOR**, **JOHN TRACY**, **BARBARA MARTIN**, **FRED FORCE**, **Mr. HOLLANDER**, **BESSIE HADSALL**, **CLINT BLODGETT**, **VINETTA JOSEPHSON**, **Mr. BRAUN**, **MARIE FRY** (only partly in view), **RAYMOND KAUTZ**, **RUTH HAINLINE**, **ROY BOWMAN**, **TOM GADWA**, **DICK BITTNER**, **DUANA LEWIS**, **WALT STEINER** and **OSCAR LARSON**.

## B. C. Manufacturers Views on Lighter Newsprint

● Judging from the comments of British Columbia newsprint manufacturers, there is no disposition to welcome talk of producing lighter grade newsprint. This proposal recently was made in WPB circles in Washington. They are all in favor of a continuation of the 32-pound standard and see no advantage in changing the weight as a wartime measure.

As a matter of fact, reduction in weight would be no innovation for British Columbia paper mills because before the war they were accustomed to manufacturing 28-pound paper for Japan and China. The paper was produced on the slower machines at Powell River and Ocean Falls, and in the Orient the newspapers were not turned out on the same type of high speed presses to which publishers have become accustomed in this country.

Technical experts of west coast paper mills are quite convinced that the saving in wood would not necessarily conform with the reduction in weight. While the mechanical adjustments necessary to produce the lighter paper might not be extensive, inasmuch as the process would merely require a thinner moisture in the head-box, overall costs of production would be considerably greater as the machines would have to operate at slower speed to prevent multiple breaks.

Lighter weight print paper was adopted

shortly after the last war. Experience at that time showed that the lighter weight was accompanied by a poorer printing surface, more trouble in the press room, increased use of wood and higher costs.

Over the years operators have reduced the sulphite pulp content of newsprint to secure a better printing paper, lower costs and save on wood. Roughly, sulphite pulp requires two cords of wood to one cord of wood for each groundwood pulp ton.

Experiments have shown that for a reduction of each pound of weight in newsprint paper there would be an increase of 3 per cent in sulphite pulp content. This is necessary as in making the lighter weight paper the sheet would be weakened to such an extent that it could not be handled properly on existing machines using the same proportions of groundwood and sulphite pulp. Therefore, in order to provide the necessary strength, the sulphite pulp content would have to be increased.

## Britain May Get More Canadian Newsprint

● Due to improvement in the shipping situation and other factors, including the fact that British newspapers have been rationed with extreme severity since early in the war, Canada's allocation of newsprint to the United Kingdom may be slightly larger during the coming year than in 1943.

Stanley Bell, managing director of the London Daily Mirror, and E. V. Robertson, managing director of the London Daily Express, two of the largest of British newspapers in point of circulation, have been visiting Canada and the United States and conferring with government officials and executives of paper manufacturing companies. Mr. Bell remarked before returning to London that he was not pessimistic concerning the outcome of his negotiations.

## Newsprint Shipped From B. C. to Australia

● British Columbia newsprint mills, Powell River Company and Pacific Mills, are continuing to ship newsprint to Australia in substantial volume despite paper rationing "down under" and they are also shipping pulp for combination with native woodpulp in the manufacture of newsprint in Tasmania.

New contractual arrangements have been entered into between Canadian newsprint producers and Australasian publishers. Current long-term contracts have been extended for a further three-year period, that is, to the end of 1948.

No additional tonnage is involved—simply the period of the contract extended so as to permit the Canadian mills to make full deliveries under the old contract, shipments having been interfered with by wartime conditions.

# Trade Talk



of Those Who Sell Paper in the Western States

## Founder of Paper Supply House Dies

● William H. Marmion, founder of The Marmion Company, 244 E. Third Street, Long Beach, Calif., passed away November 24 at the age of 87. He was born in Canada and came to Long Beach in 1906 to enter the tea and coffee business. Noting that there was no paper supply house in the area, he established the present company in the same year. The firm deals in wrappings, bags and paper specialties and does an extensive business in the Long Beach - Wilmington - San Pedro section.

Mr. Marmion leaves his son, George A. Marmion, now manager of the paper company, seven grandchildren and fifteen great-grandchildren. Another son, who was in the lumber business, passed on a few years ago. Internment was in Sunnyside Cemetery on November 26.

## Dick Berkeley Has Twentieth Anniversary

● It was "20" recently for Richard Berkeley, printing paper salesman of the San Francisco division of Blake, Moffitt & Towne, and he looked very happy when J. K. Moffitt, A. W. Towne and J. W. Towne, together with department heads and old-timers, offered congratulations.

"Dick" was placed in charge of the printing paper department's announcement section when he came to work for BM&T in 1923. Later he became a printing paper salesman.

His hobbies are his daughter Ellen (almost 12) and raising blue-blooded wire-haired terriers. Dick's dogs were shown all over the Coast a few years back, and he still keeps one of his champions as a companion.

## Machine Felts Give Relief To Refugees of Many Nations

● A report on the use of paper machine felts donated by several West Coast mills to the Maple Leaf Fund for war relief is contained in a letter from J. B. How, chairman of the blanket fund division of the British War Relief Society to J. D. Zellerbach, president of Crown Zellerbach Corporation.

Mr. How's letter states:

"It is a pleasure to be able to report to you that a constant flow of blankets, processed from dryer felts from your company, and from others whom you personally encouraged to assist in this good work, continue to go overseas to give comfort to suffering civilians.

To date 205,000 blankets have been processed and shipped, as follows:

136,000 to Britain
55,000 to Russia
5,000 to Greece
6,000 to American Red Cross
3,000 to Canadian Red Cross

## A. W. Towne Honored

For the third successive year, Arthur W. Towne, manager of the San Francisco division, Blake, Moffitt & Towne, has been elected to the board of directors of the San Francisco Chamber of Commerce. In addition he serves as chairman of the chamber's domestic trade committee.

## On Northern Trip

Don Jeffries, manager of the Newsprint Service Company of San Francisco, and Fred Ward, Los Angeles manager of that company, were recent visitors to British Columbia where they conferred with Powell River Co. officials and visited the mill.

## Herbert Chisholm Marries

Herbert Chisholm, advertising manager, Blake, Moffitt & Towne, San Francisco, and Miss Nancy Elizabeth Harter, San Francisco girl, were married December 8. After a brief honeymoon at Carmel, Calif., the newlyweds returned to San Francisco, where they will live.

## Move Quarters

Salesmen for the Zellerbach Paper Company have been moved off the ground floor of the building on Battery street, San Francisco, and up on to the second floor, allowing more space for the resale department.

## Leatherman Grandson

The big smile on the face of J. H. Leatherman, manager of the Sacramento division of Blake, Moffitt & Towne was caused by the arrival of a grandson on Nov. 10, William Harold Cook. Mother, son, and grandfather were all doing fine.

"We recently received an urgent appeal for 500 blankets to be used by Norwegian refugees in England and are happy to say that these were promptly provided.

"The three thousand blankets which were supplied to the Canadian Red Cross were placed in small hospitals (each equipped with about 25 beds) at a number of places along the Atlantic seaboard where they were used by survivors from lost ships.

"The numerous letters which we have received bear witness to the great good which these warm blankets are doing."

## Eugene, Ore., Makes Bid for Alcohol Plant

● That Eugene, Ore., may have the first alcohol - from - wood - waste plant in the West is disclosed by filing of articles of incorporation for such a plant by a subcommittee of the Eugene Chamber of Commerce. Subscription lists were being

## "Single Service" Advocated

● "Single Service News" is a new monthly four-page publication of the Public Health Committee of the Paper Cup & Container Institute of (1790 Broadway) New York. It propagandizes the advantages of offering foods and beverages in utensils used once and discarded.

The reason for starting such a campaign at a time when manufacturers cannot fill orders for paper cups and containers, it was explained, is that the wartime uses of these products in feeding fighting men and war workers are producing valuable information which should be recorded for future guidance.

## Longview Man's Death Reported After Air Raid

● The U. S. War Department has reported the death of Lieut. Alexander W. Stewart, 28, Flying Fortress pilot, who was a chemist for the Longview Fibre Company and also had been a salesman for Blake, Moffitt and Towne, paper merchants.

Lieut. Stewart previously had been reported missing after piloting a Flying Fortress on his 13th mission flying over enemy territory in Europe in October.

He was a University of Washington graduate. His wife, Mrs. Edith Stewart and his parents, who live in Longview, Wash., and a brother and sister, survive.

## Commissioned In Navy

Al Eagle, former All-Coast tackle for the University of Oregon, and lately learning the paper business was a warehouseman for Blake, Moffitt & Towne, San Francisco, recently received his commission as ensign in the Navy.

circulated, officers and directors had been elected early in December and available industrial sites had been surveyed. Eugene is ready, if and when, certain government agencies in Washington express definite approval of the industrial ethyl alcohol program. The plant will be financed by the federal government, according to latest plans.

Earlier in November, a news letter from Harris Ellsworth, Oregon's fourth district congressman, to newspapers in his district declared that eight five-million-gallon plants for the making of industrial alcohol from wood waste were to be established in Western Oregon.

Industrial alcohol, according to test runs at the Forest Service laboratory at Marquette, Mich., can be produced for 25 cents a gallon as against 96 cents for alcohol recovered from grain or molasses. A ton of wood waste, it is said, delivers 50 to 60 gallons of alcohol.

# Industry Strengthened by Pay Increases; Nearly Million Dollars Back Wages Paid

## HOQUIAM STRIKE DEVELOPMENTS

Assuming jurisdiction in the month long strike which had closed the Hoquiam, Wash., mill of Rayonier Incorporated, the National War Labor Board called upon the unions to return to work on January 7. As this issue went to press, there had been no immediate effect from the order. The local CIO union had previously refused to accept a labor board decision continuing the AFL unions as bargaining agents for the mill.

● The pulp and paper mills of the Pacific Coast are better able to compete for labor with other essential industries as a result of the recently granted wage increase to the industry on the Pacific Coast. Waiver of jurisdiction by the Tenth Board in California, after the Twelfth Board in the Pacific Northwest had announced its decision on December 2, 1943, led to uniformity of scale throughout the region, and maintained a nine year harmony between the two geographic sections into which the coast industry is divided.

Another result was of individual importance. The 5-7½ cents an hour pay increase added almost \$2,000,000 to the annual income of 13,000-14,000 employees. Besides a lump sum of \$900,000-\$1,000,000 in back wages were paid on the eve of Christmas (the wage adjustment was retroactive from June 1 to November 28, 1943).

Men who entered the armed forces from the mills since June 1, share in this lump sum to the extent of their employment under the new scale. The number of men is small and difficult to estimate.

The back pay windfall to each employee was about \$66.

The largest lump sum payment was made by the Camas, Wash., mill of Crown Zellerbach Corporation, paying out back salaries totaling \$140,000. At the West Linn, Ore., mill of Crown Zellerbach Corporation, the payment was \$51,000.

A few other typical examples of payments were—approximately \$46,000 for employees of Rayonier Incorporated at Hoquiam, Wash.; \$44,000 at the Hawley Pulp & Paper Company in Oregon City; \$37,000 at St. Helens Pulp & Paper Company, St. Helens, Ore.; \$30,000 at Oregon Pulp & Paper Company, Salem, Ore.; \$24,000 at the Port Angeles, Wash., division of Rayonier Incorporated; about \$20,000 each at Columbia River Paper Mills, Vancouver, Wash., and Puget Sound Pulp & Timber Company, Bellingham, Wash., and about \$18,000 at each of the Weyerhaeuser Timber Company's pulp mills in Longview and Everett, Wash. Among the smaller mills, payments averaged \$9,000-\$10,000 each at Pacific Paperboard Company, Longview; Pacific Coast Paper Mills, Bellingham, and the Lebanon, Ore., mill of Crown Zellerbach Corporation.

In the Analysis of Application filed by regional manpower authorities in October, it was pointed out that products of the industry were definitely critical, that government agencies have proclaimed the industry as essential and that wage increases would aid in recruiting of labor. A shortage of about 1,500

employees in the coast mills was listed. As another argument for wage increases, it was stated:

"The member mills of this (Pacific Coast) association have conducted extensive training and operating programs; have developed a job analysis program in conjunction with the unions; their safety training programs are considered a model in the area. This association cooperated with the War Manpower Commission in organizing one of the first manpower utilization plans. Piece work and incentive plans are in effect in some of the mills."

## Manpower Control In Pulp and Paper Industry

● At a meeting of the War Manpower Committee for the West Coast at San Francisco, December 15, William K. Hopkins, regional Director of the WMC declared the West Coast manpower program—called the strictest labor control ever applied in America—had been made to work.

At this meeting Washington state representatives declared manpower needs had dropped partly in that state because the program had effected a better distribution of the labor supply. Those from Oregon said elimination of unrestricted hiring there had resulted in revised labor requirements; turnover of men was lowered by 4 per cent and women by 3 per cent; that production remains undiminished although labor ceilings were cut by a third.

Under the control plan, the pulp and paper industry holds a No. 2 classification, which designates essentiality to both the army and navy, as well as to civilian necessity. Those industries which are given a No. 1 rating, such as aircraft carrier building, airplane manufacture or ship repair, remain in the No. 1 category only so long as their manpower shortage is extremely critical, but after the personnel reaches an established ceiling, the industry automatically reverts to a No. 2 rating. The No. 3 classification concerns semi-essential or non-essential operations.

A record of cooperation between government employment agencies and the War Manpower Commission has to be maintained by both No. 1 and No. 2 class industries and individual firms, to hold either classification status. The program assigns to industries a minimum number of workers essential to production, and provides for worker referral so as to dovetail into local labor supply. Both an Urgency Committee and a Priority Board operate, the first of which establishes the classification of any industry or firm in relation to the demands of military necessity, whereas the second determines the labor ceilings of each industry or firm.

With the increased wage scale, which places the pulp and paper industry on a competitive basis, and with the Northwest inadequacy of labor gradually being conquered, a balance is shortly expected to be achieved which will permit of complete and smooth functioning of the plan from that point forward until the war ends, because the pulp and paper industry actually stands 7th in the list of essential industries.

## Canada Attempts to Cut Use of Paper 50%

● As a further step in paper conservation in Canada, the federal government has restricted production of certain types of printing. Use of essential printed matter in quantity is brought under permit regulation by the Wartime Prices and Trade Board.

"Distribution of print paper used for the production of newspapers, other periodicals already restricted by previous orders are not affected by the new order," the board stated.

Provincial and municipal governments are being asked to economize in the use of printed matter. The board hopes that the order may result in curtailing the use of paper by 50 per cent.

Following are the terms of the new order, effective December 1:

1. Any person who bought in 1942 or

in any 12 months thereafter for use in his business more than five tons or \$2500 in value of the kinds of printed matter permitted by the order must get a permit from the administrator for purchase and use of printed matter. A permit is also required of anyone proposing to buy more than \$100 worth of printing paper if he has on hand more than a year's supply of that particular kind of printed matter.

2. Calendar and book manufacturing is made subject to permit. Jumbo size and multi-sheet calendars are prohibited.

3. Printing of business reply postcards and business reply envelopes and blotters is prohibited; but an envelope designed for both original use by the sender and return by the addressee may still be printed.

4. Twenty-four sheet posters designed for display on billboards, and street-car advertising cards may be manufactured. Posters, cards or bills advertising an event

for which admission is charged may, however, be displayed only in the place of entertainment, or on a 24-sheet poster panel or on a public conveyance.

5. The amount of paper in the manufacture of greeting cards is cut to 50 per cent of the tonnage used in 1942.

The order exempts:

Printed matter purchased for personnel use (not business), for charitable, religious or similar purposes or which is required by law.

## Crown Zellerbach Insurance

Crown Zellerbach Corporation has announced that it will continue its policy of paying premiums on national insurance policies up to \$5,000 for all employees in military service who have been granted military leaves of absence from the company. This will be the third year in which the policy premiums have been paid by the company.

## Miles Murray Heads Portland Safety Engineers

● Miles Murray of the Portland office of the public relations and safety department of Crown Zellerbach Corporation was elected general chairman of the Portland, Ore., chapter of the American Society of Safety Engineers at its third annual dinner meeting on December 1. Mr. Murray, a former secretary of the organization, succeeds R. A. Stanton, safety engineer for the Army Engineers.

The Portland chapter of the national society has a roster of over 100 members in the metropolitan area, with two members each from the pulp and paper mills at West Linn, Ore., and Camas, Wash., and one from St. Helens, Ore. Sixty-nine members participated in the meeting.

## Canadian Loggers' Pay Is Highest in History

● Curtailment in log production in British Columbia isn't due to low wages, operators point out.

Stuart Research Service of Vancouver, which represents timber organizations in their relations with labor, states that loggers are being paid higher wages today than ever before.

After the first world war loggers' wages in the British Columbia coast district were stabilized in 1924 with a base daily payment of \$3.20 for common labor and \$4.40 to \$7.50 for rigging jobs. Fallers and buckers received an average of \$5 to \$7.50 a day, and these rates continued until the slump in the early 30's.

Daily earnings of fallers and buckers in the lower coast logging operations at present range from \$9 to \$13. In the Queen Charlottes fallers and buckers are making, including war bonus, up to \$19 a day.

## Paper Face Masks

Paper that can be stitched, and washed and ironed is now being used to make caps and face masks to protect industrial workers from dust and moving machinery parts. Tiny pores in the paper permits the air to move through it freely but strain out dust particles.



**IN ORDER TO GIVE INCREASED SERVICE** in Southern California, the Great Western Division of the Dow Chemical Company has opened new offices in the Los Angeles financial section at 634 South Spring St. The telephone is TUCKER 3181.

C. L. PIERCE, who joined the sales staff of Great Western in 1925 in San Francisco, is in charge of the new office. In 1927, Mr. PIERCE was assigned to Southern California as sales representative and has been there since. Specializing in sales of plastics will be D. R. EBY, who comes from the Dow plant at Midland, Mich.



**HAROLD S. FOLEY**, President of the Powell River Company, recently presented a check for \$100 to **JOHN H. NORTH** (above), pattern maker, for a prize-winning suggestion to improve operations.

**MR. NORTH'S** suggestion covers improvements in the casting of flat screen connecting rods, resulting in very considerable saving in time in the replacement of broken connecting rods, sometimes a saving of five or six hours in such replacement being experienced.

**JOHN NORTH** was born near Sheffield, England, the "home of engineering," in 1868, and worked under his father in the Effingham Steam Pattern Works. In 1907 Mr. North came to Canada and has served in many engineering shops from Regina to the Coast.

## Markets No Worry

● The forest products industries of the Pacific Northwest shouldn't worry any more about markets; their only problem is a continuing source of raw material supply, according to John S. Bates, Canadian manager of Price & Pierce, marketing agency for pulp products, who spent a few days in British Columbia recently.

"Our future rests in conservation," said Mr. Bates. "The companies that look ahead and plan accordingly and who husband their resources, are the companies that will come out on top."

He reported that all the well known mill equipment companies of the Appleton, Wis., area are doing special work on equipment for ships or war machines, to the extent of each company's ability.

## Yucca Plant Used For Fiber Products

*Yucca glauca*, commonly called "bear grass," is being shipped from New Mexico to a Massachusetts paper company for use in a hard fiber paper for the Navy. It is a substitute for hard fibers formerly imported from the Orient. The dry yucca brings \$40 a ton f.o.b. cars.

Near Kingman, Ariz., a plant is being built to extract fiber from thick-leaved yuccas for cordage and burlap.

## "Opie" Hayes' Son, James, Recovering From Wounds

● Second Lieut. James Robert Hayes, 23-year-old son of E. J. "Opie" Hayes, Pacific Northwest regional representative of the Paper Division of the WPB, and Mrs. Hayes, of Tacoma, Wash., is under care at Bushnell Hospital, Brigham City, Utah, for wounds received in the North African campaign.

An officer in a U. S. Army Tank Destroyer Unit, young Hayes was on reconnaissance with two other Americans when they tripped and exploded a hidden German anti-personnel mine.

Lieut. Hayes' left leg was shattered. Surgical treatment saved the leg. He has been in the hospital for nine months and now faces another operation.

Young Hayes worked in the laboratory in the Kraft Division of the St. Regis Paper Company in Tacoma in recent years. His father was log buyer for the St. Regis mill before taking over his WPB duties.

## Testing Containers For Fish

U. S. Fish and Wildlife Service, Fishery Technological Laboratory, 2725 Montlake Boulevard, Seattle, Washington, has been conducting tests on paperboard containers for fresh fish. It announced that it was not yet ready to make any announcement regarding the results of the tests.

Paperboard containers are already being widely used by the fisheries industries and manufacturers are months in arrears of orders.

## Dunseath In Navy

Clifford LeRoy Dunseath, former office manager for Rayonier Incorporated at Shelton, Wash., has become a lieutenant, junior grade, in the Navy supply corps and has gone to Cleveland, Ohio, for duty.



**FLIGHT OFFICER FLOYD PHILLIPS**, Royal Air Force, killed in action in Italy December 21. He was the only son of **SAM B. PHILLIPS**, machine tender for the Puget Sound Pulp & Timber Company of Bellingham, Wash. Flight Officer Phillips had seen action in bombing raids over Germany, fought in Egypt, Tunisia, Sicily, and then in Italy. Before entering the service he was employed by the Minnesota-Ontario Paper Company in the electrical department. He was born in Oregon City.

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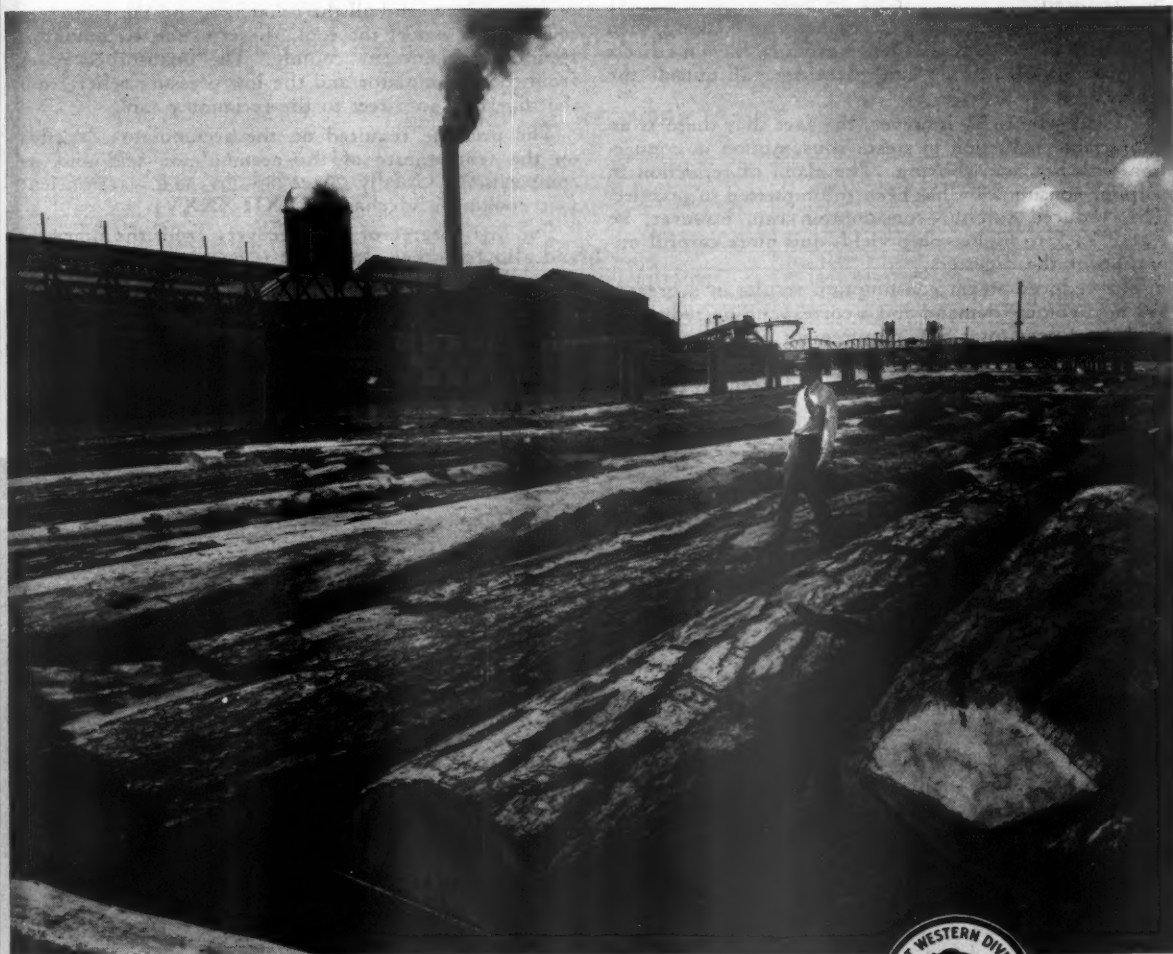
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CHEMICALS INDISPENSABLE  
TO INDUSTRY AND VICTORY

# Acid Making In the Sulphite Pulp Industry

by A. H. LUNDBERG\*

## CHAPTER II -- Continued

(This installment continues analyses of various raw acid and recovery plant arrangements).

### D. Flow Sheet No. 8.

The previous Flow Sheets Nos. 5, 6 and 7 were all in connection with cold acid recovery.

On Flow Sheet No. 8 hot acid recovery has been incorporated in its simplest form. In other words, it represents the minimum equipment with which hot acid can be produced.

The many beneficial aspects of hot acid cooking, such as greater pulp yields and better product, have no direct bearing on acid making and, therefore, fall outside the realm of these articles.

Of importance is, however, the fact that there is an appreciable reduction in steam consumption in connection with hot acid cooking. The claim of reduction in sulphur consumption has been substantiated in practice. This reduced sulphur consumption can, however, be traced back to higher pulp yields and more careful operation of the digesters.

The reduced steam consumption results in a greater raw acid volume demand and a corresponding reduction in the per cent total  $\text{SO}_2$  requirement of the raw acid.

As pointed out earlier, the capacity of an acid plant increases with the lowering of raw acid strength require-

ment. This increase in acid plant capacity is even more pronounced in mills using indirect cooking methods or liquor and gas separators.

There are two trends of thoughts and methods in regards hot acid recovery, both described in "Chemipulp Mill Operation." (1)

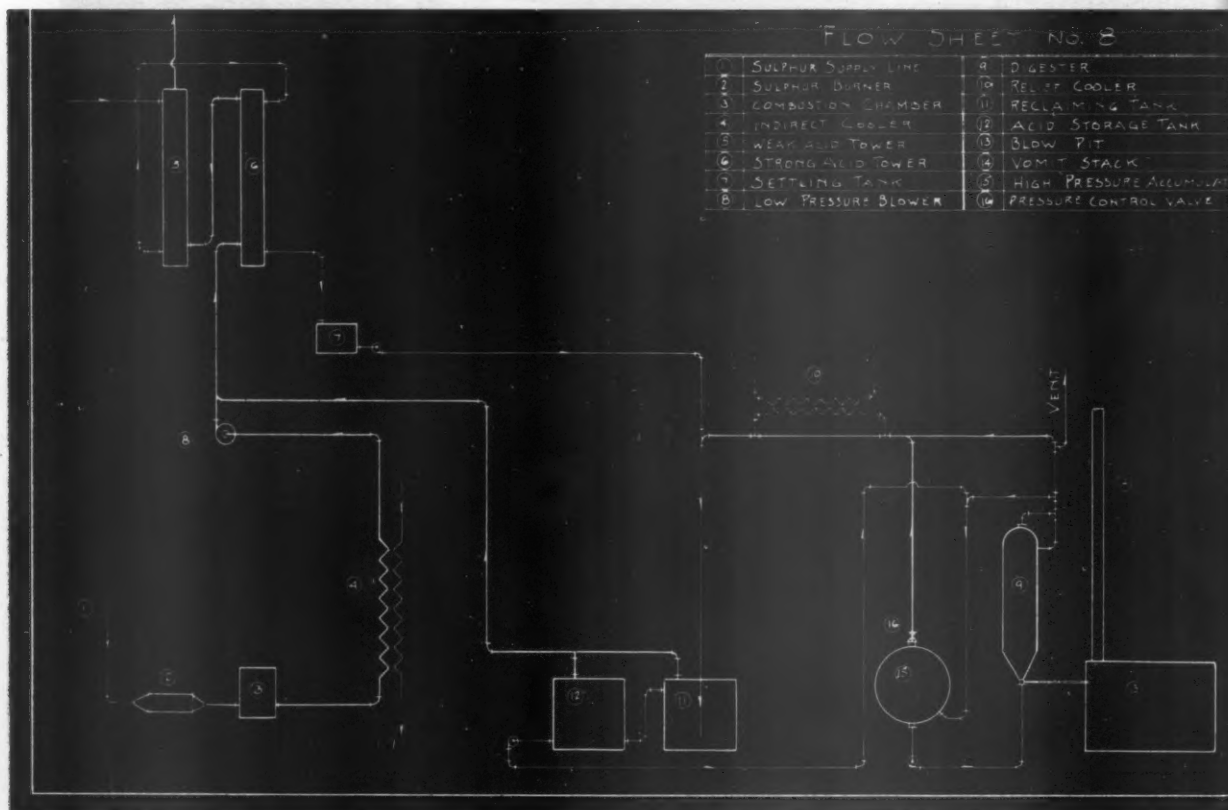
The best known on this continent is the Chemipulp Process, shown on Flow Sheet No. 8. The method of operation is to send all the relief, gas and liquid, except towards the end of the cook, direct to the accumulator, Item 15, without any cooling. The unabsorbed gases from the accumulator and the low pressure relief from the digesters go direct to the reclaiming tank.

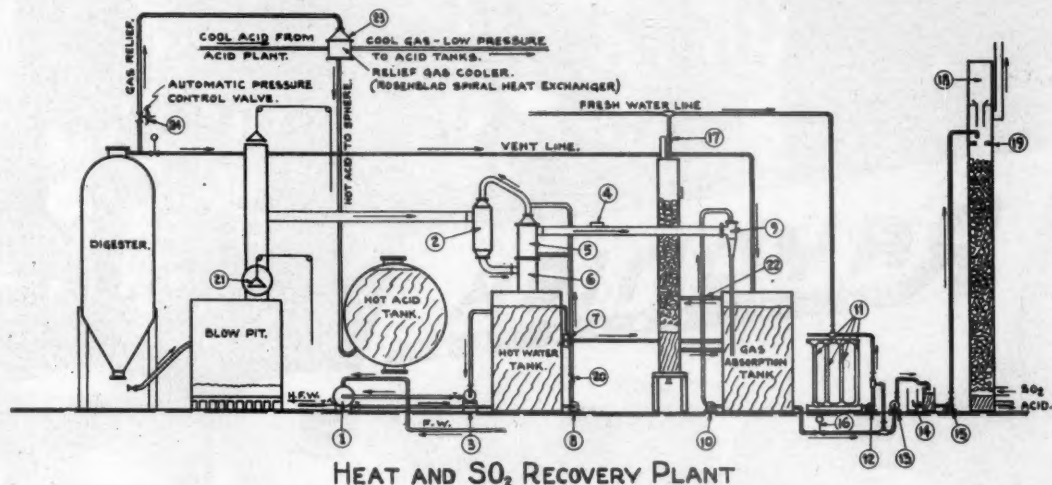
The pressure required on the accumulator depends on the temperature of the accumulator acid and its composition. Usually 25 to 35 lbs. G.P. is sufficient (see cooking acid charts XXXII-XXXV).

For high degree of  $\text{SO}_2$  recovery from the digesters and also for other reasons, it is necessary to lower the digester pressure before blowing to a point lower than the pressure maintained in the accumulator. When that point is reached the remaining relief, the low pressure relief, is sent to the reclaiming tank.

These gases, containing an appreciable amount of vapor as they do, may have to be cooled and a relief cooler, Item 10, shown dotted, might prove of con-

\*Seattle, Washington. Mr. Lundberg is Western Manager, G. D. Jonsen Company, New York City.





HEAT AND SO<sub>2</sub> RECOVERY PLANT

ITEM	NAME	ITEM	NAME	ITEM	NAME
1	ROSENBLAD HEAT EXCHANGER, (SPIRAL)	9	GAS ABSORPTION TANK EDUCTOR.	17	FLOAT VALVE CONTROL.
2	CONDENSER.	10	GAS ABSORPTION TANK EDUCTOR PUMP.	18	STEAM EDUCTOR JET.
3	ROSENBLAD HEAT EXCHANGER PUMP.	11	GAS COOLER PIPES.	19	MAKE UP DISTRIBUTOR TRAY.
4	AUTOMATIC VENTILATION.	12	GAS COOLER WATER PUMP.	20	AUTOMATIC CONTROL VALVE.
5	COOLER.	13	ACID MAKE UP SUPPLY PUMP.	21	BLOW PIT VENTILATION.
6	SEPARATOR.	14	ACID MAKE UP FOR JENSEN TOWERS.	22	GAS BREATHER LINE.
7	ACCUMULATOR OVERFLOW SYSTEM.	15	ACID MAKE UP PUMP FOR JENSEN TOWERS.	23	ROSENBLAD SPIRAL HEAT EXCHANGER.
8	ACCUMULATOR CIRCULATION PUMP.	16	PROPOSED TEMPERATURE CONTROL VALVE.	24	AUTOMATIC PRESSURE CONTROL VALVE.

Fig. No. 22

siderable value at times when the acid in the reclaiming tank gets too warm for proper absorption of the SO<sub>2</sub> gas.

The method of pumping the digesters with acid and the means for elimination of part of the inert gases from the relief was discussed under analysis of Flow Sheet No. 5.

The other method (See Fig. 22) of piping arrangement and operation is to cool the digester relief by means of a heat exchanger, using the storage acid as cooling medium. Thus the cooking acid is first prepared in the cold state in the reclaiming tank, then heated by the relief gases during its way to the accumulator. The relief gases on the other hand are cooled for absorption in the reclaiming tank.

The advantage with the latter method is that it permits storage of a large volume of cooking acid relatively cheaply in wooden tanks, which is not possible with the standard Chemipulp system, where the cooking acid must be stored hot in bricklined or other acid-resisting pressure vessels. On the other hand it cannot possibly produce as strong a cooking acid. The Chemipulp process absorbs SO<sub>2</sub> gas under pressure, while the alternate method still depends on absorption at atmospheric pressure. The efficiency of the two systems will be discussed later.

Combination and modification of the two methods are, of course, possible.

#### Absorption Calculations

Sulphur consumption 250 lbs. per ton pulp  
 Sulphur loss in system 8 lbs. per ton pulp  
 Raw acid requirement 1500 U. S. Gals. 12500 lbs. per ton pulp  
 Cooking acid requirement 2500 U. S. Gals. 19200 lbs. per ton pulp  
 Burner Gas 17% SO<sub>2</sub> (Dry Basis)

Temperature of tower water 60° F. (15° C.)  
 Temperature of cooking acid 176° F. (80° C.)  
 Temperature of reclaiming tank acid 86° F. (30° C.)  
 Accumulator pressure 29.4 lbs. G.P.  
 Digester relief gases contain 350 cu. ft. S.T.P.  
 Inert gases per ton of pulp

Wanted: A cooking acid of highest possible per cent total SO<sub>2</sub> with 1.20% Comb. SO<sub>2</sub>. 1.20% Comb. SO<sub>2</sub> in cooking acid corresponds to about 1.65% in raw acid. Chart XXXIV gives a maximum cooking acid strength at 176° F. and 3 atmospheres of 6.15 Total SO<sub>2</sub>—1.20% Comb. SO<sub>2</sub> for a dry gas strength of 90% SO<sub>2</sub>.

#### 1. Chemipulp Std. Method Fig. 23

The trial and error method is used and a cooking acid of 5.50% Total—1.20% Comb. SO<sub>2</sub> is assumed possible.

SO<sub>2</sub> in cooking acid  $0.055 \times 19200 = 1056$  lbs.  
 SO<sub>2</sub> consumed = 484 lbs.

SO<sub>2</sub> in digester relief 572 lbs.

Gases entering Accumulator (dry basis)  
 SO<sub>2</sub>  $572 \times 5.6 = 3203$  cu. ft. S.T.P.  
 Inert 350 cu. ft. S.T.P.

Gases leaving Accumulator (Chart XXXIV)  
 Minimum SO<sub>2</sub> 73% (Dry Basis)  
 Inert 27% (Dry Basis)  
 Total gases leaving  $350 \div 0.27 = 1300$  cu. ft. S.T.P.  
 SO<sub>2</sub> gases leaving

$0.73 \times 1300 = 949$  cu. ft. S.T.P. = 170 lbs. SO<sub>2</sub>  
 SO<sub>2</sub> absorbed in accumulator  $572 - 170 = 402$  lbs.  
 To satisfy the cooking acid demand of 1056 lbs. SO<sub>2</sub> the acid pumped to the accumulator must contain  $1056 - 402 = 654$  lbs. SO<sub>2</sub>

Thus testing  
 $654 \div 125 = 5.24\%$  Total — 1.65% Comb. SO<sub>2</sub>  
 Such an acid can be produced without difficulty in the

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reclaiming tank (Chart XXIX). Gases leaving reclaiming tank (Chart XXIX).

Minimum SO<sub>2</sub> 32% (Dry basis)

Inerts 68% (Dry basis)

Total gases leaving  $350 \div 0.68 = 515$  cu. ft. S.T.P.

SO<sub>2</sub> gases leaving  $0.32 \times 515 = 165$  cu. ft. S.T.P.  
= 29 lbs. SO<sub>2</sub>

SO<sub>2</sub> absorbed in reclaiming tank thus

$$170 - 29 = 141 \text{ lbs.}$$

To satisfy the reclaiming tank acid demand of 654 lbs. the acid pumped to the reclaiming tank, in this case the tower acid, must contain  $654 - 141 = 513$  lbs. SO<sub>2</sub>. Thus an acid testing  $513 \div 125$  or 4.11% Total — 1.65% Comb. SO<sub>2</sub>. Such a tower acid can readily be produced (Chart XXII).

Consequently a somewhat stronger acid than assumed can be maintained in the Accumulator but not an acid 6.00% Total — 1.20% Comb. SO<sub>2</sub> as can be seen from the following calculations.

SO<sub>2</sub> in cooking acid  $0.06 \times 19200 = 1152$  lbs.  
SO<sub>2</sub> consumed = 484 lbs.

SO<sub>2</sub> in digester relief 668 lbs.

Gases leaving Accumulator (Chart XXXIV)

Minimum SO<sub>2</sub> 85% (Dry Basis)

Inert 15% (Dry Basis)

Total gas leaving Accumulator

$$350 \div 0.15 = 2333 \text{ cu. ft. S.T.P.}$$

SO<sub>2</sub> gas leaving Accumulator

$$0.85 \times 2333 = 1982 \text{ cu. ft. S.T.P.} \\ = 354 \text{ lbs. SO}_2$$

SO<sub>2</sub> absorbed in Accumulator

$$668 - 354 = 314 \text{ lbs. SO}_2$$

Thus the acid pumped to the Accumulator must contain  $1152 - 314 = 838$  lbs. SO<sub>2</sub> and test  $838 \div 125$  or 6.70% Total 1.65% Comb. SO<sub>2</sub>. Such an acid at 86° F. will have a vapor pressure corresponding to 60% dry SO<sub>2</sub> gas. Thus the gases leaving the reclaiming tank (Chart XXIX) will contain

Minimum SO<sub>2</sub> 60% (Dry basis)

Inert 40% (Dry basis)

Total gas leaving  $350 \div 0.40 = 875$  cu. ft. S.T.P.

SO<sub>2</sub> gas leaving  $0.60 \times 875 = 525$  cu. ft. S.T.P.

SO<sub>2</sub> absorbed in Reclaiming tank  $354 - 94 = 260$  lbs.

The tower acid pumped to the reclaiming tank must, therefore, contain  $838 - 260 = 578$  lbs. SO<sub>2</sub> and test  $578 \div 125$  or 4.62% Total — 1.65% Comb. SO<sub>2</sub>, which according to the tower acid charts cannot be produced.

With an absorption tower after the reclaiming tank it can, however, be accomplished, but it should be noted that the reclaiming tank acid will be considerably stronger than the Accumulator acid (See Fig. 24).

Neither the Accumulator nor the reclaiming tank is in actual operation as efficient as calculated with. A fact demonstrated earlier by results obtained at Soundview Pulp Co., and Puget Sound Pulp & Timber Co.

If a stronger acid than 5.50% Total — 1.20% Comb. SO<sub>2</sub> is wanted in the Accumulator there are, however, three alternatives to follow:

- Alt. 1. Lower the temperature of the Accumulator Acid.
- Alt. 2. Increase the Accumulator pressure.
- Alt. 3. Lower the temperature of the Reclaiming Tank Acid.

## 2. Alternate Method Fig 25

An absorption tower is used and a cooking acid of 6.00% Total — 1.20% Comb. is assumed.

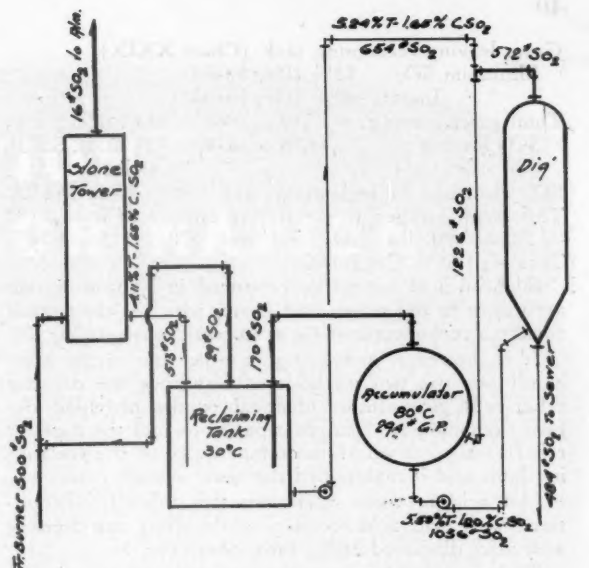


FIG. # 23

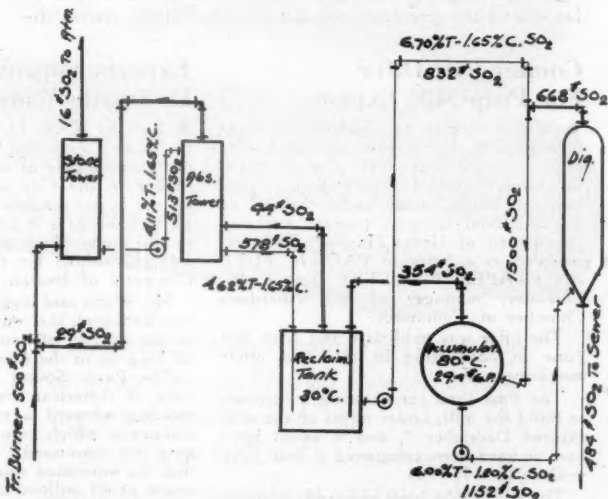


FIG. # 24

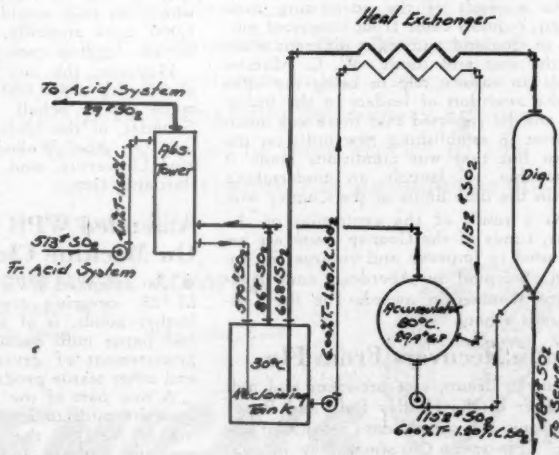


FIG. # 25

Gases leaving reclaiming tank (Chart XXIX).

Minimum SO <sub>2</sub>	58% (Dry basis)
Inerts	42% (Dry basis)
Total gases leaving	$350 \div 0.42 = 834$ cu. ft. S.T.P.
SO <sub>2</sub> leaving	$0.58 \times 834 = 483$ cu. ft. S.T.P. = 86 lbs.

SO<sub>2</sub> absorbed in reclaiming tank  $668 - 86 = 582$  lbs.  
Thus acid pumped to reclaiming tank must hold  $1152 - 582 = 570$  lbs. SO<sub>2</sub> and test  $570 \div 125 = 4.56\%$   
Total — 1.65% Comb. SO<sub>2</sub>.

Such an acid cannot be produced in a tower system according to the tower acid charts which is the reason for the incorporation of the absorption tower on Fig. 25.

It is, however, interesting to note that under most conditions the two methods of handling the digester relief will give almost identical results provided the heat exchanger is of ample capacity to cool the digester relief to a point where the temperature of the reclaiming tank acid is maintained the same in each case.

Hot acid recovery eliminates the difficulty encountered with cold acid recovery while filling the digester with acid, discussed under Flow Sheet No. 5.

With hot acid recovery the cooking acid is kept under pressure in the Accumulator. When withdrawn there is a slight lowering of the pressure in the Accumulator and the pressure regulator immediately closes the

automatic relief valve. As the temperature of the acid is high enough, sufficient vapor and gases are liberated to fill the void. Consequently there is no interference with the stone tower operation.

#### Conclusions

Compared to the layout as per Flow Sheet No. 5, the layout as per Flow Sheet No. 8 has distinct advantages, but it has several of the weaknesses found in the Flow Sheet No. 5.

The advantages are:

1. On account of lower steam consumption a larger volume of raw acid is produced of lower SO<sub>2</sub> strength.
2. The recovery system is improved.
3. Normal operation is not upset by pumping of acid to the digesters.

Its weaknesses are:

1. No control of the acid composition except when cold fresh water is used.
2. No means by which the cooking acid strength can be built up quickly as needed.
3. Reclaiming system is still inadequate. An absorption tower is needed.
4. No control of fluctuating relief gas flow with subsequent disturbance in Acid Plant operation.
5. The raw acid and cooking acid departments are integral parts of each other.

### Cooney Gift Offer For Pulp Mill Expires

● War priorities and restrictions made it impossible for anyone to accept the offer of a 500-acre site plus \$100,000 for construction of a pulp mill at Cosmopolis, Wash., made under the will of the late Neil Cooney, pioneer bachelor lumberman of Grays Harbor. This was revealed in a letter to PACIFIC PULP AND PAPER INDUSTRY from F. W. Linklater, manager of the Aberdeen Chamber of Commerce.

The offer was publicized last May and June in advertising in this and other magazines.

The time limit for entering a contract to build the mill, under terms of the will, expired December 7, and it would have had to have been completed a year later — December 7, 1944.

The will would have required construction of a sulphite pulp mill of at least 150 tons daily capacity, unless a majority of Cosmopolis property owners agreed to a sulphate mill as an alternative.

As a result of the advertising campaign, requests came from interested parties in England and eight different states of the east and south. W. C. Mumaw made an eastern trip to bring the offer to the attention of leaders in the industry and he reported that there was much interest in establishing new mills on the Coast but that war conditions made it impossible to launch an undertaking within the time limits of the Cooney will.

As a result of the expiration of the offer, funds of the Cooney estate are being used to improve and enlarge St. Joseph's hospital in Aberdeen and to finance scholarship awards for the Cosmopolis school.

### Braun Recovers From Flu

Carl E. Braun, vice president and mill manager of the Hawley Pulp and Paper Company, lost several days because of the "flu." He spent Christmas Day in bed, but returned to work on Monday, December 27.

### Experts Approve Logging In Seattle Watershed

● Lyle F. Watts, U. S. Forester, refuses to become disturbed over the efforts to continue logging of some 90,000 acres of timber in the City of Seattle watershed on the upper reaches of the Cedar River. In fact, he gave it his support indirectly to the move which would open up considerable timber for the Soundview Pulp Company of Everett, Wash.

Mr. Watts said logging operations have not damaged the watershed. A faction in the Seattle city council wants to halt all logging in the area.

The Puget Sound Section of the Society of American Foresters at a recent meeting adopted a report of its policy committee which recommended that logging be continued. The report stated that the watershed should produce a minimum of 35 million feet of logs per year under a sustained yield cutting program.

This is in line with the proposal by U. M. Dickey of Seattle, president of Soundview, that operations be limited to only 25 or 30 million feet per year, which, he said, would remove timber on 1,000 acres annually, thus setting up a 90-year logging cycle.

However, the city council has gone ahead with a \$12,000 survey, now being made in its behalf by Prof. Bror L. Grondal, of the University of Washington; Dr. Abel Wolman, of Johns Hopkins University, and Carl E. Green of Portland, Ore.

### Amended WPB Order On Machine Clothing

● An amended WPB conservation order M-328, covering textile, clothing and leather goods, is of importance to pulp and paper mills because of its effect on procurement of dryer canvas and felts and other textile products.

A new part of the order, in effect, allows the mills to apply their MRO Rating or AA2 to the purchase of paper machine clothing and other textiles that are a "functioning part of industry machinery."

### Shipbuilding Badges For Camas Machinists

Three hundred machine shop employees of the Camas, Wash., division of Crown Zellerbach Corporation have received from the Oregon Shipbuilding Corporation, Portland, Ore., a gold lapel badge and certificate of the OSC (Order of Shipbuilding Champions) for their contribution to the shipbuilding industry in keeping it supplied with vital machined parts and other essentials.

The certificates are inscribed with individual names of the recipients, and bear the inscription: "To each of you, the world's champion shipbuilders, is awarded the OSC emblem in recognition of your outstanding achievements in making this the world's number one shipyard."

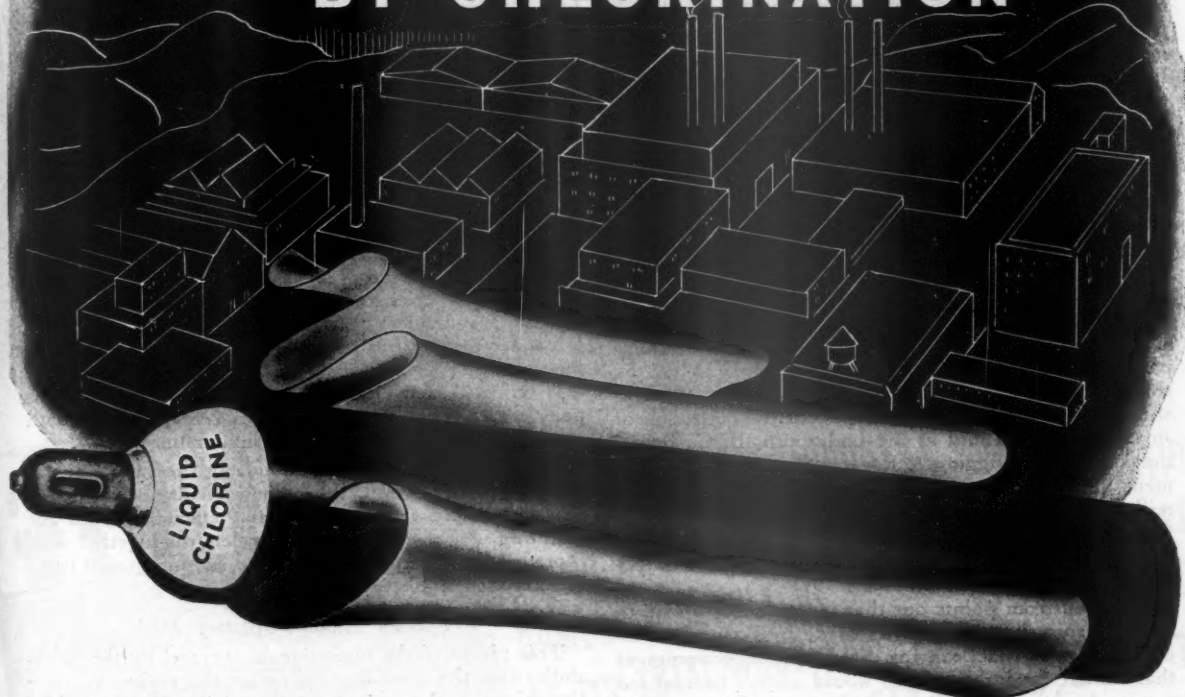
### West Linn Men Are Shipbuilding Champs

● Forty men who work in the machine shop of the West Linn, Ore., Crown Zellerbach mill have received pins which designate the recipients as members of the "OSC" (Order of Shipbuilding Champions). Presentation was made by the Oregon Shipbuilding Corporation for meritorious service in tooling of essential ship parts. The pins are gold lapel buttons, with outspread wings supporting a hull with main mast in a bow silhouette.

### Paper Used In Canada For Parachutes

● Canada is experimenting with the use of paper in the manufacture of parachutes for dropping drugs, food and supplies in emergencies, according to Frank MacDougall, deputy minister of lands and forests. Chutes manufactured by an eastern Canadian company have been tested by George Ponsford, director of the air services in Ontario, and he has suggested some improvements to meet requirements in flying in the bush country of northern Canada. The test loads weighed 10, 20 and 30 pounds.

## CONSERVATION BY CHLORINATION



Important in the conservation program is the proper use of chlorine for slime control in the paper industry. Among the direct benefits realized by hundreds of mills who use chlorination and Break-Point chlorination of both fresh and recirculated water are:

Elimination of slime spots, pin holes, and objectionable odors . . .

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Chlorination makes possible the operation of a more nearly "closed system" involving white water re-use.

Articles by HOOKER chemists and executives, reprinted from various pulp and paper-making publications, discuss in detail the methods of chlorination which have proved best suited for sulphate pulps, as well as those which have been most effective for sulphite pulps. Along with a bulletin listing chlorine-conserving suggestions, copies of these articles will be supplied on request. Ask for bulletins of Group PP-1.

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## Stenstrom Finds Canadian Small Log Salvaging Problem Is Economical

*[Because of its possible important future application to the entire West Coast woods industry, a British Columbia program of salvaging small logs from already logged-over lands has been reported upon at length in PACIFIC PULP & PAPER INDUSTRY. There was a full discussion of the project in the July, 1943, issue and developments have been reported in almost every issue since then].*

● Many problems have yet to be solved in connection with the log utilization experiment being undertaken by Powell River Company, Comox Logging & Railway Company and the British Columbia government, but present indications are that the salvaged wood should be well within the present average pulp log cost.

This is the opinion of David G. Stenstrom\*, who made an analysis of the project for Powell River Company. Briefly, the three-way experiment launched by the pulp and paper and logging companies in partnership with the government provides for the collection of small logs left behind at the Ladysmith, B. C., operation of Comox Logging & Railway Company, the shipment of that material to the Powell River Company's mill and its conversion there into pulp. So far, only a few small experimental shipments have been made, but the volume is expected to be substantial during the coming year.

Mr. Stenstrom points out that it would be unwise to assume from the cost analysis made by Assistant Forester Angus P. MacBean for the provincial government that similar favorable results would always be realized from other and more distant operations. For instance, rafting the small logs which will probably involve some form of "bundling," towing and handling at the mill is still in the trial and error stage and costs cannot be definitely worked out on that phase of the operation until a permanent technique has been adopted. However, Mr. Stenstrom believes that none of these problems of transportation will be sufficiently formidable to jeopardize the success of the logging waste salvage idea as a whole.

One of the interesting points involved in this experiment is the extent to which Douglas fir may be used for pulp. Every timber tract on Vancouver Island and the lower mainland contains some fir even if hemlock predominates.

If a fairly high proportion of fir to hemlock could be handled at the mill, obviously all salvage operations would benefit by higher recovery per acre, lower cost, and so on. One of the objections to fir as a pulpwood in groundwood and sulphite is its pitch content which causes trouble on the paper machines by clogging the wire and thus forming holes in the sheet.

### Fir Has Little or No Pitch

● James Sheasgreen, superintendent of Comox Logging & Railway Co., believes that the young fir which is encountered in the Ladysmith salvage operation carries little or no pitch, and if this is the case it might be possible to recover practically all small young fir found in the salvage area.

\*Mr. Stenstrom, former manager of mills at Ocean Falls, B. C., and in Quebec, and recently a special consultant to Powell River Company, now is in Montreal as deputy technical advisor to the Pulp & Paper Products Administration of Canada's War Time Prices & Trade Board.

Harry Andrews, control superintendent of Powell River Company, is of the opinion that up to 10 per cent fir can be used in the manufacture of groundwood pulp if it is comparatively free of pitch. Applied to the whole groundwood production, this would be about 500,000 feet monthly, or 20,000 feet daily, and such a quantity is never likely to be handled.

However, it is felt that the use of young fir in groundwood should be encouraged in every way, for two major reasons: 1. To improve all log salvage operations. 2. To increase the all-over pulpwood supply.

Mr. Stenstrom believes that consideration should be given now to rafting or "bundling" fir separately from hemlock as it will be necessary to regulate the flow of the separate species to the groundwood mill. He points out in this connection that in the eastern Canadian mills determined efforts have been made to use jack pine, another pitchy wood, in pulp manufacture, and it is reported that Canadian International Paper Company endeavors to use up to 10 per cent jack pine, with other companies working along similar lines.

Regarding the method of handling the small logs at the Powell River mill, the main difficulty seems to be that any really well designed and efficient layout for handling such material of random lengths together with short logs of greater diameter such as long butted hemlock, broken logs, etc., will be fairly costly.

### Proposes Slasher-Splitter Mill

This phase of the operation is overcast by the probability that the company will eventually make extensive alterations to the main sawmill and install a hydraulic log barker, but for the time being Mr. Stenstrom has recommended the construction of a slasher and splitter mill as already laid out on the west side of the sawmill, such mill to have a capacity of 40- to 50,000 feet per eight-hour shift. This recommendation is now being acted upon, and the mill will probably be in operation some time in February.

For the time being and until such time as the hydraulic barking process is installed, the wood from the splitter mill will be dumped into existing conveyors and be barked and otherwise handled along with wood from the regular sawmill. After the present sawmill is revamped one or more barking drums can be moved to a location near the sawmill and the small wood drum barked and sent directly to the old grinder room.

Operation of the west side of the sawmill may be expedited by installing a fast, shotgun feed carriage. As all grinderwood will still have to be cut to 32 inch long blocks the necessity for a fast breakdown rig in the sawmill will exist after the hydraulic barker and chipper is installed as well as now.

It has not yet been determined whether a separate log haul for the pulp breakdown will be necessary after the hydraulic barker goes into operation.

The log chipper will probably be located at some point away from the sawmill as, once the logs destined for the chipper are cut to 20 foot lengths and barked no further sawmill treatment is necessary. In that event the log chipper would have its own log haul and thus materially reduce the work now done by the present log haul.

In addition to advising that every encouragement be

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**PIONEER**

OF THE WOOD PULP INDUSTRY IN THE PUGET  
SOUND AREA, WHERE ONE-THIRD OF THE NATION'S  
DOMESTIC SUPPLY OF SULPHITE AND ONE-FIFTH  
OF ITS TOTAL WOOD PULP SUPPLY IS PRODUCED  
ANNUAL CAPACITY 170,000 TON



**PUGET SOUND PULP & TIMBER CO.**  
*Bellingham, Washington*

given to loggers operating within reasonable distance of the mill to ship their small logs to Powell River and recommending that the handling of salvaged wood at the mill be facilitated as much as possible with a close check on costs. Mr. Stenstrom suggests that all scaling be done on the mill log deck and this scale accepted by seller, buyer and the forest branch of the provincial government.

As Mr. Stenstrom points out, it is practically impossible to scale accurately enough in the woods, and the small logs involved cannot be scaled in the water. It is understood that this view has already been accepted by the provincial government.

### FOREST SERVICE REPORT

Those interested in the cost aspects of the small log salvage experiment will regard as particularly valuable the interim analysis made by Angus P. MacBean, assistant forester British Columbia Forest Service. This is concerned primarily with operations for the period ending September 30. The cutting began on May 28 and covered a period of 66 working days. The first yarding machine went into operation June 3. Since the middle of August two machines have been at work. Early in September the first unit was withdrawn and a third machine was put into operation. Yarding operations have extended over a period of 92½ working days.

At the outset an attempt was made to measure all wood as it was yarded into the pile, but this proved impractical and since then a scaler followed the cutters, measuring all pieces that could be followed through. No scale was made if both ends could not be positively identified as belonging to one piece. For each cutting area an average piece content for each species was struck, and this was applied to the chaser's count, which is made as the material is yarded to the roadside piles, to determine the total scale. On the first area only a gross scale was made, but since then a net scale has been kept, that is, scale measurements were reduced to make allowance for unsound portions of the log.

Probably the only opportunity to make a complete check will occur when the wood is taken into the mill at Powell River.

Summary of costs from the inception of the experiment in late May until the end of September:

Cutting				
Cutting Area No.	Area—acres	Gross scale —cu. ft.		Recovery per acre
	Yarded	Cut	Yarded	Cut
1	58.50	62.20	104,825	109,189
3	20.71	23.70	23,221	25,222
Total	79.21		128,046	1792

Cutting			
Cutting Area No.	Man-day costs per 100 cubic feet.		
	Yarded wood	Wood cut	
1	0.0457	0.0439	
3	0.0646	0.0595	
Average	0.0492 = 2032 c.f. per m.d.		

As a partial scale is being made it is only possible at this time to establish costs on two of the five cutting areas. Yarding has been completed on these two areas. Higher costs on the third area are due to greater care being exercised in bucking all tops, in releasing buried material and in bucking-off cedar, which is not being utilized, and cull material, which would interfere with yarding.

### Scaling

Cutting			
Cutting Area No.	Man-day costs per 100 cubic feet.		
	Yarded wood	Wood cut	
1	0.0162	0.0155	
3	0.0172	0.0158	
Average	0.0164		

On the first area 56 per cent of the yarded wood was scaled, and on the third area 70 per cent.

### Yarding

Machines (Peanut Pickers) Nos. 1 and 3 have yarded over the A-frame boom mounted on the rear of the truck. Approximate average external yarding distance has been 250 feet.

Machine No. 2 has yarded over a raised 90-foot tree to an approximate average external yarding distance of 540 feet.

Yarder No.		Wood Yarded		Av. recovery
	Logs	cu. ft.		per acre
1	3949	53,995		1746
3	935	11,587		1077
2	4072	54,706		1850

Yarding No.		Man-day costs per 100 cubic feet		Cubic feet
		Yarding	Repairs	yarded per man-day*
1	0.2676	0.0562	0.3238	374
3	0.3074	0.0076	0.3150	325
2	0.4126	0.0197	0.4323	237

\*Exclusive of repairs.

"Yarding costs for the first yarder are high due to the poor performance of this machine during part of the period of its operation," reports Mr. MacBean. "An old hoist, formerly used for swiftering, was first used in order to find out what type of unit was required. The machine has been withdrawn from use and a heavier hoist, powered with a Chrysler industrial engine and fluid drive clutch, similar to the units which have been developed for the second and third machines, is to be installed.

"Very low recovery per acre is responsible for the high costs for the short period of operation with No. 3 yarder. This recovery is much below average, both for the area actually yarded, but also for the whole area under salvage.

"Yarder No. 2 operating with a tree, requires a 5-man crew. Costs are higher than those obtained by the A-frame method, which requires only a 3-man crew. Lower costs may be expected, as nearly half of the wood yarded during the period analyzed, was well below average recovery per acre. Moreover, an inexperienced crew was used during part of this period."

The yarders used are as follows:

Yarder No. 1—Day and Elder, 2½-ton truck, solid rubber tires, equipped with Buda 4-cyl. engine. Willamette-Ersted, Model 3, 2-drum hoist, with 3-speed transmission. Hoist powered with International Harvester power unit No. 200, 1000 r.p.m.

This yarder has been temporarily withdrawn from use as the hoist, previously used for swiftering, proved too light. A hoist and engine similar to those used on the second and third units are being assembled for this machine.

Yarder No. 2—White 2-ton truck, Model 61, pneumatic tires, 4-cyl. Buda engine, 2-drum hoist, powered by Chrysler industrial engine T120, equipped with fluid drive clutch. The engine is governed at 1800 r.p.m., giving a calculated line speed on the main line drum of approximately 350 feet per minute.

Yarder No. 3—Republic 5-ton truck, solid tires, 4-cyl. Buda engine. Drums and engine similar to unit on Yarder No. 2. Calculated line speed on the main line drum approximately 325 feet per minute.

The drums on the second and third yarders are of much heavier construction than on the first unit. Combined with the Chrysler engine, and operating at a single speed, they appear to be giving a very satisfactory performance, states Mr. MacBean.

All three yarders are equipped with 28-foot, A-frame booms mounted on the rear of the truck. The Republic 5-ton truck has proved most satisfactory for this purpose. It has a long wheelbase (15.5 feet) and very heavy frame and springs.

The first and third machines have been yarding over their A-frame booms. They were supplied with 350 feet of 9/16-inch main line, and 750 feet of 7/16-inch haulback line. Their average, external yarding distance has been about 250 feet. The second machine has been yarding over a 90-foot tree which is raised with the aid of the A-frame boom. This yarder was equipped with 850 feet of 9/16-inch mainline and 1800 feet of 7/16-inch haulback line. Average external yarding distance has been 54 feet approximately.

Prevailing wage rates have been as follows: Hook-tender, \$7.60, since mid-July \$8.85; engineer, \$7.10; chaser, choker-man, signaller, machines, \$5.85.

Since September the crews have become more stabilized and in consequence they are becoming more experienced. At first there was some difficulty in overcoming the big-log psychology, some of the men evidently finding it hard to regard the small log operation seriously. Higher recovery has been attained as the operation continues. Bardon hooks were introduced late in September and they have helped to increase production.

Under present logging practices, only those trees that are above the minimum of 10 to 12-inch tip diameter are removed from timber stands. The small trees, together with the tops from the large trees, broken logs, large limbs, etc., constitute what in the past has represented sheer loss to the industry. This amounts to roughly 40 per cent of the total stand.

## Sustained Use of B. C. Timber Is Urged

● Plans for the development of timber in the interior of British Columbia on a sustained yield basis so as to provide the raw material for pulp, paper and lumber mills for an indefinite future period are being urged by the Interior Lumbermen's Association, headed by President Harry Turner.

The region covered by the proposed program, which has been laid before the provincial government, comprises the area east of the Cascade Mountains and south of the main line of the Canadian Pacific Railway. This consists of 193,244,000 acres, of which 33.6 per cent is capable of producing commercial timber and 2.2 per cent is arable, the balance unproductive. These figures indicate definitely that the interior of British Columbia is primarily a forest area, and competent authorities estimate that this area is capable of producing a sustained annual timber yield of 1,780,000,000 feet.

The actual yield during the period 1914 to 1942 inclusive has never exceeded 400,000,000 feet, or less than one quarter the potential production. Cutting has been concentrated in accessible areas with the result that as soon as the timber has been cut out of an area within an economic radius of a mill, the mill has been closed down.

The brief submitted to the government recalls previous surveys of British Columbia's timber resources and the recommendations made for a more realistic policy with regard to allocation of funds derived from the forest industries. The Sirois commission in 1940 made this comment:

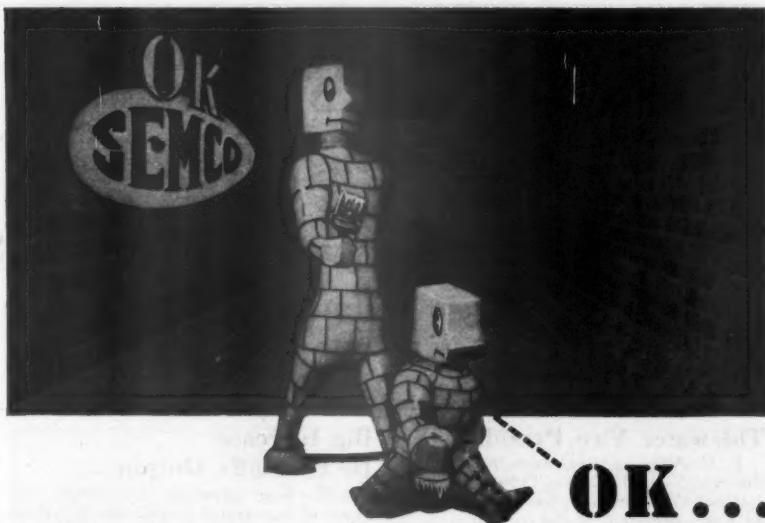
"In British Columbia the exploitation of natural reserves of timber that have taken centuries to accumulate, by persons leasing the land with little or no interest in the possibility of another crop 100 years later, offers an example of the results of an enterprise in which immediate profits is the main motive. Mill towns flourish suddenly and die away as the surrounding region is denuded, and ghost towns and rural slums are left to mark what was once a seemingly prosperous village or town."

The Interior Lumbermen's Association wishes to avert in future the spread of these ghost towns that have become an all too common part of the province's landscape. The association maintains that the annual revenue of \$3,000,000 derived by the government from timber sources should be treated as accruing from the sale of an asset and should be used for replacing that asset just as would any business operating having any hope of survival.

## Powell River Co. Keeps In Touch With Employees

● Powell River Company believes in keeping in touch with its former employees now in the fighting services.

At the outbreak of war, the company arranged to make regular shipments of cigarettes to its men overseas. Today, more than 300 men who used to work for Powell River are in service and to these men alone the company has been shipping 750,000 cigarettes annually—2500 per man. In addition, 500 cigarettes are mailed each Christmas to every employee stationed in Canada and serving in the armed forces. The company also took out subscriptions to the Powell River weekly newspaper for delivery to men and women overseas.



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For **LONG LIFE** and  
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with **ECONOMICAL** and  
**TROUBLE-FREE SERVICE**

**Stebbins Engineering Corporation**

TEXTILE TOWER

SEATTLE, WASHINGTON

## Felthouse Is Acting Plant Engineer

● At the Weyerhaeuser Pulp & Paper division, Longview, Washington, Donald G. Felthouse is acting plant engineer during the absence of M. L. Edwards, plant engineer, who is temporarily engaged in special war work. Mr. Edwards is not expected to return for some months. On his return Mr. Felthouse will automatically resume his former title assistant plant engineer.

## Contagious Appendicitis?

● W. E. Wegner, research assistant in the Central Technical Department, Crown Zellerbach Corp., Camas, Wash., had his appendix removed at a Vancouver, Wash., hospital on December 3. Friends who called his wife, Mary Wegner, by telephone to ask about his condition, were unable to reach her. Later they discovered Mary was in the same hospital on the same day, also having an operation for appendicitis.

## Jaite Bag Becomes Bemis Bag Company

● The former Jaite Paper Bag Company, St. Helens, Ore., is now operating under the name of the Bemis Paper Bag Company. For some time past the company has been a separate corporation, but a part of the Bemis Brothers operations. The parent company is at St. Louis.

The change in name does not indicate either an alteration in personnel or ownership, according to L. A. Linville, manager of the company under its former, as well as its present name.

## Marshall Transferred

Lieut. Harry Marshall, U.S.N., in private life a member of the firm of Marshall & Barr, Exchange Bldg., Seattle, has been transferred to Charleston, S. C., from Fort Schuyler, N. Y. His address is 182 Tradd St., Charleston.

Lieut. Marshall was formerly engaged in the design of construction at several Puget Sound mills.

## Paul Naumann Retires

The retirement of Paul Naumann, carpenter in the mechanical department of the West Linn, Ore., mill of Crown Zellerbach Corporation, has been announced by the management, effective January 1. Mr. Naumann went to work at the West Linn plant on August 12, 1907, so has nearly 37 years of service behind him.

## U. S. Helps Chile Decide Possible Timber Uses

● Potentialities of a pulp and paper industry in Chile, as well as other uses of the South American nation's forest resources, are to be investigated by U. S. Forest Service specialists.

The U. S. Department of Agriculture announced that "it may be desirable to make additional tests of Chilean timber species, including their pulping qualities, at the Forest Products Laboratory, Madison, Wis."

Among five U. S. foresters who have gone to Chile are two from Portland, Ore., divisions—Philip Briegleb and Burnette Payne. Heading the party is Dr. I. T. Haig.

# Exporters

*aiding the pulp and paper industry*

## AGNER & FREDRICKSON CO.

Colman Bldg. Seattle 4

Established 1925

### Tidewater Vice President

P. E. Allan, general sales manager of the Associated Division, Tide Water Associated Oil Company, has been appointed a vice president of the company.

Mr. Allan joined the company in 1915, and by 1920 was assistant sales agent at Portland, Ore., and later became district sales manager in San Francisco and domestic sales manager of the Associated Division.

### Lagerloef Collection

Col. Hans Lagerloef, president of Lagerloef Trading Co., New York, wood pulp brokers, has given the Smithsonian Institution his collection of Aguinaldo Philippine stamps. The collection contains 2,242 specimens.

### Big Increase In Dyestuffs Output

Working overtime to supply the needs of our armed forces, the American dyestuff industry turned out 168,000,000 pounds of dyestuffs in 1941, as compared with 46,000,000 pounds in 1917, according to "Dyelines and Bylines," monthly journal of Calco Chemical Division, American Cyanamid Company. The industry made 27,000,000 pounds of vat colors other than indigo, as compared with 14,000,000 pounds in 1917.

The dyes are used in uniforms and other equipment and for camouflage purposes, giving protective coloring to our forces, no matter whether they are fighting in jungle-green surroundings, on gray ships, or against a light brown desert background.

In turning out this record volume of material, the industry met every demand for production and performance in spite of the fact that basic chemicals needed to manufacture dyes have been shared with makers of explosives, pharmaceuticals, aviation gasoline and synthetic rubber.

### Your Job Depends on Fire Crews, Says Sumner Organ

The Sumner Iron Works' volunteer fire department, composed of 100 employees divided into four squads, was recently described by Capt. Paul Parkhurst of the Everett, Wash., Fire Department, as "the most alert outfit I ever worked with."

Harold Rulien is chief of the Sumner crew, organized two years ago. Interest in the squads continues high, says the company house organ "Shop Talk," which aptly points out that the jobs and paychecks of every man and woman in a plant depend on these volunteer fire fighters.

### One Vote Margin For Full Union Shop

By a slim one-vote margin, membership of the Pulp Sulphite Local 76 rejected an executive recommendation that the union accept a modified agreement proposed by the Powell River Co. management as an alternative to their demand for a full union shop clause in their labor agreement with the employers.

Result of the vote was: For acceptance, 331; against, 332. One ballot was spoiled.

The referendum having been turned down it is presumed that the unions will pursue their demand for a full union shop clause.

### Efforts Made to Build Mill In New Zealand

Renewed efforts are being made by New Zealand Forest Products, Ltd., to obtain from the New Zealand government a license to erect and operate a pulp and paper mill, according to advices received by Canada's trade intelligence service.

It is claimed that such a mill would absorb as raw material the company's pine trees, the forests of which cover some 170,000 acres. A decision by the New Zealand government is expected shortly.

The delay in granting the license is said to have been due to the fact that the government has been considering the whole question of utilizing its own timber holdings.

The New Zealand Forest Service recently cabled a request to this magazine for a copy of its Annual May Review number of last year in order to obtain a complete illustrated description, as published in that issue, of the new hydraulic whole log barker and whole log chipper at the Everett, Wash., pulp mill of the Weyerhaeuser Timber Company.

The New Zealand Forest Products, Ltd., has already erected an insulating board mill which is now in successful operation. The company has 60,000 shareholders scattered throughout the British empire who have invested some \$24,000,000 in the enterprise.

### Mills Projected In New Zealand

A letter to this magazine dated October 12 from A. R. Entrican, Director of Forestry, State Forest Service, Wellington, New Zealand, states that "a number of paper industry projects are under consideration" in that distant unit of the British Empire.

He said these include construction of new plants and extension of mills already in operation.

Mr. Entrican said the description in the Annual May Review Number of PACIFIC PULP & PAPER INDUSTRY of the Weyerhaeuser Timber Company's hydraulic barker "proved most interesting."

### Groundwood Mill At Full

West Linn, Ore., division of Crown Zellerbach Corporation, reports its groundwood mill operating at full capacity. Labor sufficient to fill out the crew has been secured from men released from seasonal work of various types, mainly agricultural. Although turn-over among this class is big, enough men are available to keep the mill operating.



## Dispense With Blowpits, Suggests Engineer

● Consideration might be given to dispensing with blowpits altogether in a new sulphite mill, or when radically altering an old mill, in the opinion of Dr. John S. Bates, of Price & Pierce Limited, Montreal pulp engineer.

In kraft mills it is common practice to use blowtanks instead of diffusers. With a line of sulphite digesters one can visualize a single blowtank, or preferably two blowtanks in parallel for changing from one pulp grade to another or for making repairs. The blowtank would be 1½ to 2 digesters in capacity, probably larger in diameter and less in height than for kraft, and installed at the lowest possible level for an approach to horizontal blowing at low pressure from the digesters tangentially into the blowtank. The structural materials would be much the same as for blowpits. This would meet the first requirement of gentle blowing without diluting hot liquor.

The second objective is maximum recovery of sulphur dioxide and heat from waste liquor. This would become a simple matter of installing one recovery unit above the one or two blowtanks, without involving the losses inherent to blowpits. The installation at Cornwall is an example of what might be done.

The stock blown at about 10 per cent consistency would be diluted in the lower part of the blowtank with hot waste liquor, and the mixture at about 3 per cent would be pumped continuously to a rotary washer. This means that practically all the spent liquor would be available from the washer at high temperature and with very little dilution, which suits the requirements for any by-product use.

The recent blowtanks at Powell River represent a trend in this direction, but do not accomplish all the results which will be desired in future, states Dr. Bates.

## National Aniline Offers Research Service

● Lawrence H. Flett has been transferred from the Buffalo plant to the sales department, National Aniline Division, Allied Chemical & Dye Corporation, and will be located at the Executive Offices, 40 Rector St., New York.

In his new capacity of director—new production Division, Mr. Flett, who holds the Schoellkopf medal for his work in Nacconol, National synthetic detergent, will afford specialized technical research service to National's customers.

## Two General Electric Men Promoted

Victor S. Herrington, General Electric Company, Los Angeles, has moved to San Francisco to be manager of the company's transportation division there, and James H. Williams will be the transportation division representative in the Los Angeles area, according to an announcement made by Raymond M. Alvord, commercial vice-president of the company.

A graduate of Washington State College in 1923, Mr. Herrington joined General Electric the same year. Mr. Williams was born in Hong Kong, China, of United States citizens.

A. G. Jones will continue as Pacific district manager, central station-transportation division and will have general executive supervision over the division activity in the district.

## Foxboro's Handbook

● "Principles and Practice of Flow Meter Engineering," by L. K. Spink, published by The Foxboro Company, Foxboro, Mass., (\$3) now appears in a new and enlarged edition, the sixth since the book was first published in 1930. New and advanced phases of the subject are covered for the first time, bringing the book up to date and adding to its usefulness. The author is a member of the working committee which developed the latest AGA orifice meter tables, a member of the ASME fluid meter research committee, and of the joint AGA and ASME pulsation research committee. As an engineer who has devoted many years to the study of flow measurement, he is extraordinarily qualified to handle the subject.

## Link-Belt Promotions

W. C. Carter, president, Link-Belt Company, Chicago, announces the promotion of Edward J. Burnell, vice-president and general manager of Pershing Road plant operations in Chicago and central division sales, has been transferred to vice-president in charge of sales for the entire Link-Belt Company.

Assisting Mr. Burnell will be Nelson L. Davis, sales manager for materials handling machinery; William H. Kinhead, sales manager for power transmission machinery, and C. Walter Spalding, sales manager for power transmission equipment required by original-equipment manufacturers and duplicate machinery accounts.



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**WE CAN AGAIN SUPPLY BELTS  
BUILT TO YOUR SPECIFICATIONS.  
SPECIFY**

**SYNALITE CON-  
STRUCTION FOR  
GREATEST SERVICE  
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Super Construction with  
**SYNALITE**

1. *What is Synalite?* It is Pioneer's abrasion-heat-oil resistant American-made synthetic rubber compound—the result of over 10 years of constant research.
2. *Are all Pioneer Belts made of Synalite?* No, you have your choice of Synalite or compounds of ordinary government synthetics. Synalite, however, is unsurpassed for all services.
3. *Price?* Synalite construction carries a premium compared to belts made from ordinary synthetic rubber. It is costlier to compound and produce. But performance more than offsets higher first cost.

Answering your inquiries on belting problems is again a pleasure. Not only can we supply a belt designed to meet your job conditions, but build it of the finest American-made rubber compound ever developed for the purpose. Pioneer belting craftsmen have worked with "Synalite" for more than 10 years.

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**PIONEER RUBBER MILLS**  
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## CONVEYOR BELTS



Builders of SAWMILL, SHINGLE MILL  
PULP and PAPER MILL MACHINERY  
For Fifty Years




## Pattern for VICTORY

THE courage of our fighting men; the grim tenacity of the peoples who refuse to be conquered; the skill and industry going into production of the materials of war—these are some of the factors that will bring Victory for the cause of freedom and justice.

Liberty Ship Steering Engines, part of one shipment of war materials continually going forth from our plant on schedule, make the interesting picture shown at the left—a small part of the great pattern for Victory.

**SUMNER  
IRON WORKS**  
EVERETT, WASHINGTON





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ARE  
THE FACTS**

about  
**ELECTRICITY**  
and  
**Wartime Regulations**

**EVEN** though dim-out regulations have been lifted, your government asks that you continue to conserve electricity in order to save manpower, fuel, materials and transportation. The War Production Board has requested all electric companies to urge their customers to greater conservation, even where there is plenty of electricity. This is part of a Seven-Industry program designed by the government to achieve maximum war production.

**USE WHAT YOU NEED—BUT  
NEED WHAT YOU USE**

**PUGET SOUND  
Power & Light Co.**

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War Production Board

**CHIEF or SUPERVISING ENGINEER** with technical education and 25 years experience desires position. Experience with maintenance, construction, drafting and some design; licensed power plant engineer and electrician. Address Box 1, Pacific Pulp and Paper Industry, 71 Columbia Street, Seattle 4, Wash.

## Wanted:

Either one synchronous motor for 3-pocket grinder, 750 KW to 1000 KW, 3-phase, 60-cycle, 440-volt, 240-RPM, or two motors 400 to 500 KW—one or both to be synchronous.

**Shartle Bros. Machine Co.**  
Middletown, Ohio

**FOR SALE:** 1 Single Effect Feed Water Evaporator; complete with centrifugal type catchall, piping, controls and supports necessary for the installation and for its operation under essentially automatic control. Approximate weight, 19,000 lbs. (This evaporator the same as the paper manufacturing black liquor evaporator). Capacity—6820 lbs. of vapor per hour. **DETAILED SPECIFICATIONS CAN BE OBTAINED FROM COMMISSIONER OF FINANCE, CITY OF ALEXANDRIA, LOUISIANA.**

## 1459 Take Insurance

In a recanvas of employees, 1459 workers of the Camas, Wash., mill of Crown Zellerbach Corporation, have signed for the combination life, sickness and accident policy offered by an insurance company in cooperation with the mill management. Cost to workers is 60c per month per \$1000 of insurance, with the mill management assuming the balance per individual on the group life insurance plan.

## Three Retire at Camas

Three employees of the Crown-Zellerbach mill at Camas, Wash., who recently were placed on the retired list:

Albert Leeper, of No. 1 finishing room, an employee since 1920; Mrs. Mae Borigo of the bag factory, who worked intermittently since 1917 and steadily since 1928, and A. A. Furman of No. 1 finishing room, an employee since 1918.

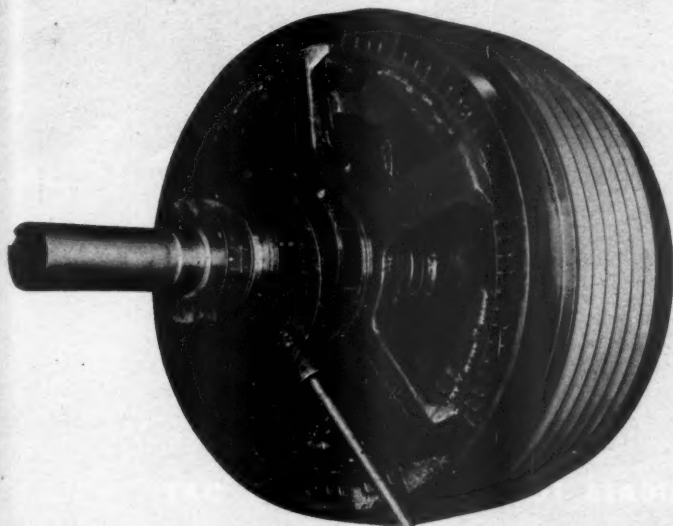
## West Linn Man In Alaska

Raymond Howell, formerly assistant foreman in the finishing room of the West Linn, Ore., mill of Crown Zellerbach Corporation, but now a CM 2nd Class with the Seabees, is stationed in Alaska. His whereabouts was revealed in a letter of thanks to the company for its reimbursement of government insurance premiums which the company carries for its service men.

## Ray Astle Visits Mill

Ray Astle, assistant manager of the Western Gear Works at Lynwood, Calif., was a recent visitor at the Pulp Division, Weyerhaeuser Timber Company, Longview, Wash. He was formerly assistant office manager at the mill.

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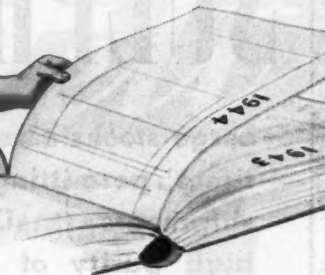
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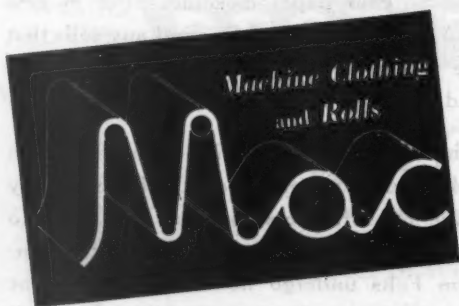
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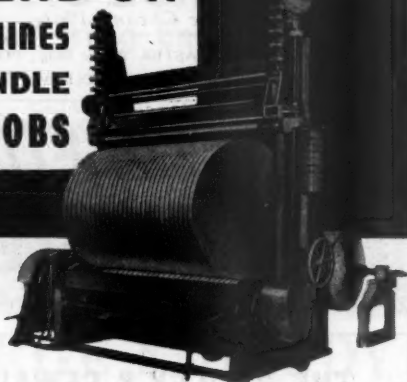
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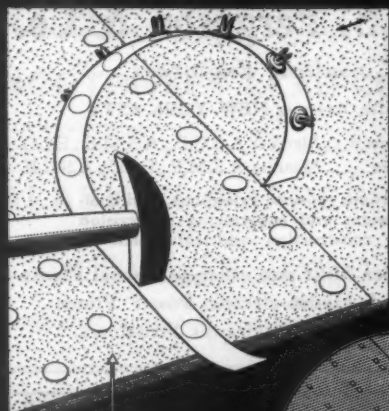
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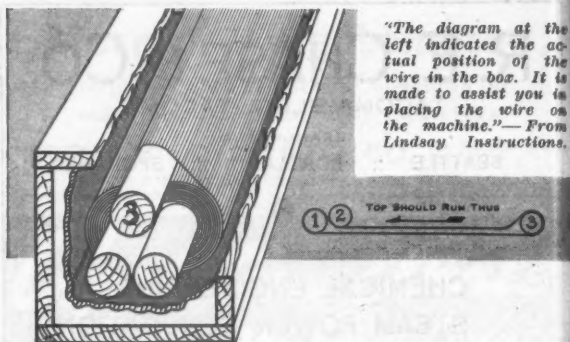


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